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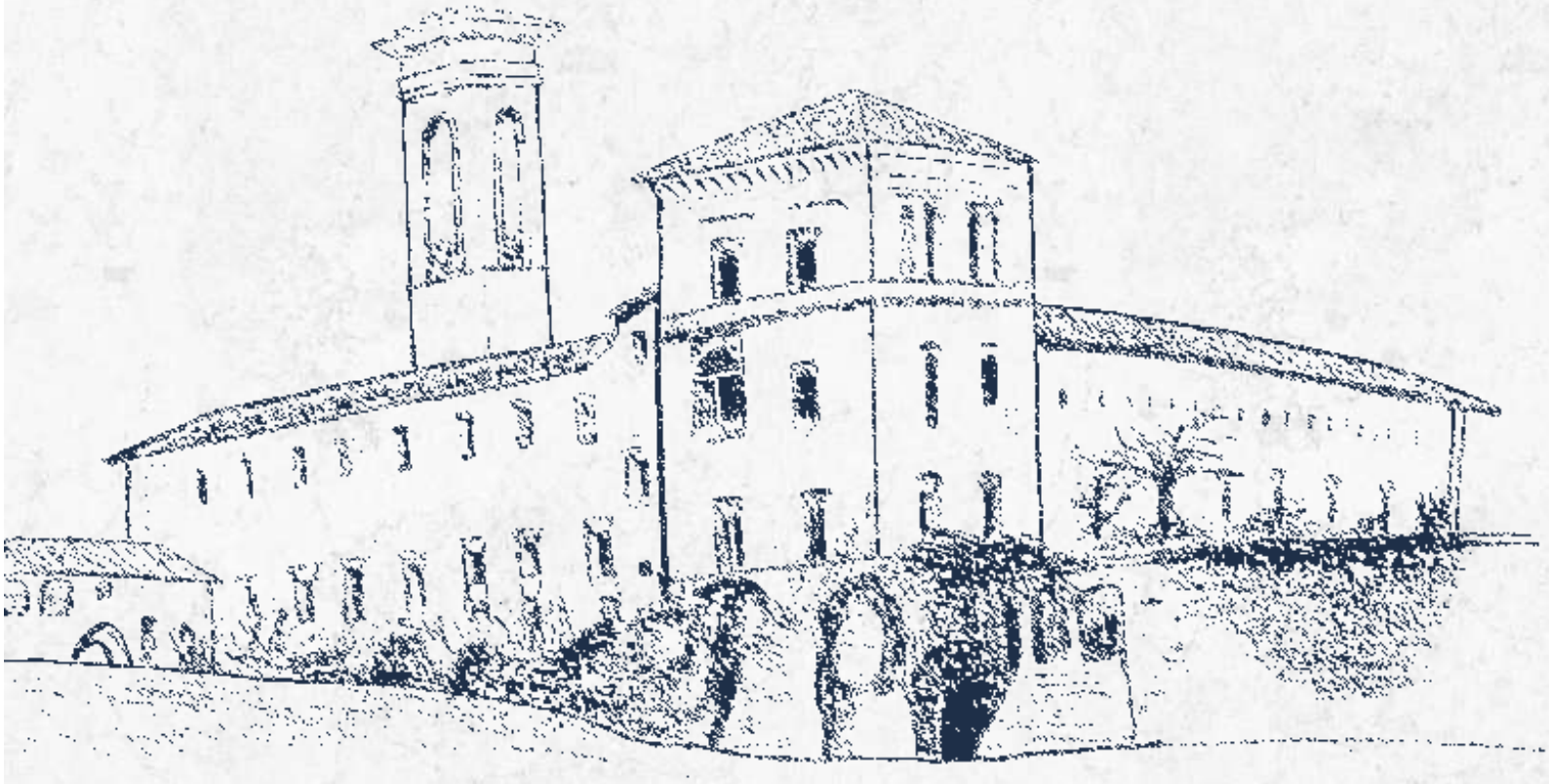

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The Right to Strike in a Neoliberal Context

Sergio Gamonal C. *

Abstract

Chile is known as a country that has applied the neoliberal recipes of the Chicago School to the extreme. Within this context, Chilean trade union law is extraordinarily restrictive and regulatory. Neoliberal legislation has limited the right to strike, disfiguring it when compared to the doctrine of the ILO's committee on freedom of association. In this work, we will refer to two observable trends within this context: one purely legal and the other factual. The legal trend refers to how academics and the courts have interpreted Pinochet's 1980 constitution broadly and evolutionarily to admit the strike as a constitutional right. On the other hand, unions and workers increasingly resort to strikes outside the legal framework, and with atypical modalities. Both trends intersect when the courts have upheld atypical strikes as a constitutional right for workers. However, both directions have not been sufficient to develop strengthened unionism in Chilean labour law.

Keywords: *Neoliberalism; Freedom of association; Strike.*

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You know as well do that when we are talking on the human plane question of justice only arise when there is equal power to compel: in terms of practicality the dominant exact what they can and the weak concede what they must[1]

1. Introduction

The *Fable of the Bees* of Bernard Mandeville, the first version of which was published in 1705, is considered as one of the founding works of the economic theory of *laissez-faire*[2]. Mandeville tells us the story of a thriving beehive abundant with both occupations and bad habits, the latter being key to the prosperity of the beehive. In other words, because all of its inhabitants are somehow thieves, the entire beehive is prosperous. Notwithstanding this, the bees decide to become honest, and the many activities that depend on the misfortunes of others disappear, thus, it also becomes extinct. The name of the Fable ends with this famous quote: *Private Vices Public Benefits*, perhaps Mandeville's most famous quote. For many, The Fable of the Bees is the DNA of capitalism.[3]

The Chilean case might as well be similar to that of the Fable of the Bees, as the dictatorship of Pinochet led to a genuine neoliberal revolution, privatizing all spheres of Chilean society[4], from education to prisons, from public works to health and pensions. Likewise, taxes were lowered, foreigners were allowed to exploit natural resources without being required to pay any taxes or royalties, and State-owned companies were privatized at shockingly low prices and given out to Pinochet's closest circle almost for free.[5]

On the other hand, and although the country has experienced an economic growth, the huge inequality[6], the persistent productive matrix of an exporter of commodities, which has not yet been overcome, and the consolidation of

[1] Thucydides, *The Peloponnesian War*, Oxford University Press, 2009, p. 302.

[2] L.C. Rutledge, *The Fable of the Bees by Bernard Mandeville (1670-1733) and Its Influence in Literature and Economic Theory*, in *American Entomologist*, Vol. 52, No. 3, 2006, p. 134.

[3] D. Dufour, *Cuando el robo es virtud*, in *Le Monde Diplomatique*, Chilean edition, 2017, pp. 34-35.

[4] D. Barría Traverso, E. Araya Moreno, O. Drouillas, *Removed from the Bargaining Table. The CUT during the Bachelet Administration*, in *Latin American Perspectives*, Issue 185, Vol. 39 No. 4, 2012, p. 89.

[5] J.G. Palma, *¿Cuánto habrá que esperar para que los Chicago Boys & Asociados respondan por el botín que algunos se llevaron?*, in *CIPER Chile* (09/12/2013), available in: https://www.ciperchile.cl/2013/09/12/%C2%BFcuanto-habra-que-esperar-para-que-los-chicago-boys-asociados-respondan-por-el-botin-que-algunos-se-llevaron/

[6] Chile shows one of the biggest inequalities worldwide. See P. Posner, *Bachelet and the Chilean Model*, in *Georgetown Journal of International Affairs*, July 12, 2016.

major monopolies consisting of less than 10 families -which practically own the country and dominate almost all the media (print media, TV, radios, etc.) and almost all the *think tanks*- raise doubts about Chile's capacity to become a developed country in the future[7]. Chile is what MIT professor Ben Ross Schneider calls *hierarchical capitalism*,[8] which tends to monopolies and low productivity. In this context, the social outcry of October 2019 is no surprise, nor is the fact that the governing elite was forced to begin a process for the drafting of a new constitution. Discontent is huge, and it may be illustrated with some of the most popular graffiti and banners of the protests since 2019:

> Until dignity becomes a habit"[9]; "¡Chile Awoke!"[10]; "There is still a lot month left at the end of the wage"[11]; "If there is no bread for the poor, there shall be no peace for the rich" [12]; "I'm sorry that my protesting gets in the way of your traffic, but your INDIFERENCE gets in the way of my country"[13]; "One need not be a communist to wish for a better world" [14]; "I do not fear death. I fear retirement" [15]; "To the Congress: If pension payments do no rise, at least approve the euthanasia law" [16]; "PLUNDERING is for a university student to be forced to pay during 20 years what a congressman makes in 2 months" [17]; "They want to take out our eyes because they know we already opened them"[18]; "Fight until living is worth it" [19]; "I am a Dietician, and violence is that 50% of the senior adults who are admitted to hospitals are MALNOURISHED"[20], and "Violence is to refer to years of abuse as <<NORMALITY>>[21].

[7] J.G. Palma, *Cómo fue que nos graduamos de "país de ingreso alto" sin salir del subdesarrollo*, in *CIPER Chile* (07/15/2013), available in: https://www.ciperchile.cl/2013/07/15/como-fue-que-nos-graduamos-de-pais-de-%E2%80%9Cingreso-alto%E2%80%9D-sin-salir-del-subdesarrollo/

[8] B.R. Schneider, *El capitalismo jerárquico de Chile difícilmente puede ser defendido por los partidarios del libre mercado*, in *CIPER Chile* (05/04/2016) available in: http://ciperchile.cl/2016/05/04/el-capitalismo-jerarquico-de-chile-dificilmente-puede-ser-defendido-por-los-partidarios-del-libre-mercado/

[9] R. Molina Otárola, *Hablan los Muros. Grafitis de la rebelión social de octubre de 2019*, Lom, 2020, p. 23.

[10] Id. p. 23.

[11] Id. p. 36.

[12] Id. p. 46.

[13] Id. p. 52.

[14] Id. p. 60.

[15] Id. p. 60.

[16] Id. p. 62.

[17] Id. p. 69.

[18] Id. p. 71.

[19] Id. p. 80.

[20] Id. p. 87.

[21] Id. p. 92.

This process has yet to end, and, for the time being, the costs of human rights violations are very high, and they brought back to life ghosts that seemed to have been overcome."[22] The weakness of unions has played a key role in the inequalities of the labour market[23], which has led to a low collective bargaining coverage.[24] The limitations to the right to strike, among others, have been key to this result.[25]

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[22] There are several reports on the serious human rights violations in Chile by the Government since October 2019: (1) Human Rights Watch in https://www.hrw.org/es/world-report/2020/country-chapters/336397 (2) Office of the United Nations High Commissioner for Human Rights in https://www.ohchr.org/Documents/Countries/CL/Report_Chile_2019_EN.pdf (3) Informe de Derechos Humanos en Chile ("Human Rights Crisis in Chile: A Digital Inquiry") of the University of California in Berkeley and Santa Cruz in https://storymaps.arcgis.com/stories/1ee6a10615944aeab3be4fce51c03989 (4) Amnesty International in https://amnistia.cl/informe/capitulo-de-chile-informe-anual-2020-21/ (5) Informe Final Report of the International Human Rights Observation Mission of the World Organization Against Torture in https://www.omct.org/es/recursos/reportes/final-report-of-the-international-human-rights-observation-mission.
Likewise, the Inter-American Commission of Human Rights has expressed concern about the serious violation of human rights in Chile: https://www.oas.org/en/iachr/media_center/PReleases/2019/317.asp

[23] On inequality in Chile, see PNUD, *DESIGUALES. Orígenes, cambios y desafíos de la brecha social en Chile*, Uqbar Editores, 2017.
According to the OECD, Chile is one of the three Latin American countries with the highest levels of income inequality, in: https://www.elmostrador.cl/noticias/2020/03/09/segun-informe-de-la-ocde-chile-es-uno-de-los-tres-paises-latinoamericanos-mas-desiguales-en-cuanto-a-ingresos/

[24] G. Durán, S. Gamonal C., *La opacidad de las cifras: La cobertura de la negociación colectiva en Chile*, in *Derecho y Crítica Social*, 5 (1-2), 2019, pp. 1-38.
A draft of this paper, in English (Collective Bargaining Coverage in Chile: Increase or illusion?), is available in: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3396890
Collective bargaining agreements are regulated in detail in Chile, i.e., the Labour Code includes the types of agreements, their content, bargaining rules, a mandatory renewal calendar (which ranges, depending on the agreement term agreed upon, from 2 to 4 years, its effects, etc. For example, for the agreement to be renewed, a proposal by the workers must be filed within 65 to 45 days before the expiration of the agreement in force. The response by the employers, the negotiations, the potential claims by the parties to such negotiation with the Labor Directorate, are regulated based on such presentation. If no agreement is reached within 45 days, they may vote for strike (this is the only hypothesis of legal strike). The process must end with an agreement agreed upon between the parties or presumed by law (if it is not possible to approve or execute the strike, for example, the workers are presumed to accept the last offer of the employer).

[25] Not only the case of Chile, but the entire Latin America region shows a weak protection of freedom of association. Probably the only exception is Uruguay. See S. Gamonal C., C.F. Rosado Marzán, *Principled Labor Law. U.S. Labor Law through a Latin American Method*, Oxford University Press, 2019, pp. 163-164.

As Numhauser-Henning explained many years ago, the role of anti-union legislation in Chile was quite relevant. Contrary to the deregulation usually associated with neoliberalism, the Labour Plan of the Dictatorship, in 1979, enshrined a significant degree of state intervention in collective bargaining labour law. These rules of the game favored the individual freedom of the worker over that of the union, and also the decentralization of collective bargaining at the enterprise level, which, along with rules that prohibited collective bargaining in certain cases (all matters related to the employer's direction and disciplinary powers), encouraged a free-market economy[26].

In this scenario, we must not forget all the limitations to the right to strike, which is only possible in the final state of collective bargaining at the company level and workers could be replaced from day 1. After the return to democracy, in 1990, although this legislation was reformed, it retained its essence, especially its detailed regulations, its applicability in only one case (the final stage of bargaining at the company level), and the rules of replacement[27], which limited the effectiveness of strike and its nature as a countervailing power in bargaining.

In addition to this, governments since1990 were incapable of substantially amending the Labour Plan of the dictatorship, and of providing answers to the observations of the ILO for Chile to respect freedom of association.[28]

Strike is essential for the empowerment of the workers. As shown in the first quote at the beginning of this paper, regarding the Melos Dialogue, where the arrogant Athenian ambassadors told the rulers of the small island of Melos that justice is only present among those who have the same power[29]. Force operates where power is unequal.[30] The Melos Dialogue reminds us of the limitations of law in the case of power asymmetries.[31] And it also reminds us why the right to

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[26] A. Numhauser-Henning, Ann, *Towards a Neo-Liberal Labour Law? The example of Chile*, in *Den Neoliberala Arbetsrätten. Exemplet Chile*, Juristförlaget i Lund, 1996, pp. 191-192.

[27] S. Gamonal C., *Chilean Labour Law 1990-2010: Twenty years of Both Flexibility and Protection*, in *The International Journal of Comparative Labour Law and Industrial Relations*, Vol. 27 No. 1, 2011, pp. 85-94.

[28] See S. Gamonal C., *The Labor Reform in Chile: New Wine in Old Wineskin*, in *Employee Rights and Employment Policy Journal*, 23 (2), 2019, pp. 219-247; and P. Pérez Ahumada, *Why Is It So Difficult to Reform Collective Labour Law? Associational Power and Policy Continuity in Chile in Comparative Perspective*, in *Journal of Latin American Studies*, 53 (1), 2021, pp. 81-105.

[29] Thucydides, *supra* note 1, p. 302.

[30] Notwithstanding the questionable historical truthfulness of this encounter. See A. Gómez-Lobo, *El diálogo de Melos y la visión histórica de Tucídides*, in *Estudios Públicos*, No. 44, 1991, pp. 247-273.

[31] The Melians did not accept the surrender, they were proud of their freedom and autonomy after 700 years. After months of heroic fight, they were subjected by the Athenians, who killed all adult males and enslaved women and children. See Thucydides, *supra* note 1, p. 307.

strike is so important in the face of corporate powers. Before 1990, union law in Chile was enacted in 1924 and in the Labor Code in 1931. The system was based on bargaining by company, with a single union that represented all the workers. Additionally, during the second half of the 20th century, two bargaining systems by branch of activity were developed: In the late 60s, in the industry of agriculture, and in other industries, through tripartite commissions (for example, in construction). With the 1973 military dictatorship, this system ended and was replaced in 1978 by the Labour Plan, which allows for exacerbated union parallelism at the company level (there are cases of companies with more than 100 small unions and many different collective bargaining agreements, even within the same establishment), collective bargaining only at the company level, just for wage issues, with the possibility of declaring a strike, but the employer has the right to replace workers from day one. As we have already mentioned, after the return to democracy in 1990, this scheme of the Labor Plan has been maintained. [32]

This work has focused on two phenomena that have tried to overcome the Labour Plan. In fact, given this restrictive scenario, legal scholars and Chilean courts reinterpreted the Constitution of 1980, which only prohibited strike, on the understanding that strike was a fundamental right too. Moreover, in practice, strikes have taken place beyond the legal framework in several strategic sectors, and workers have tried to impose measures of pressure beyond the limits of the prohibition legislation. Both trends have tried to push the limits of the Labour Plan. As will be analyzed at the end of this paper, both cases converge in the case law of our courts. However, results have been modest. In other words, we can conclude that constitutional changes are most pressing in Chile[33], in order to empower unionism and to balance the labour market.

2. Beyond the Labour Plan: A Dynamic Interpretation

Today, in Chile, strike due to a non-compliance with the law or with the employer's collective bargaining agreement is not legal, nor are industry or solidarity strikes, or strikes due to anti-union practices of the employer.

Strike is only applicable as the last stage of collective bargaining regulated in the law. As the law provides stringent deadlines for the renewal of collective bargaining agreements, the employers know what the date of a potential strike will be almost 2 years in advance. In this scenario, it is no surprise that workers

[32] Gamonal, *supra* note 28, pp. 225-230.

[33] Notwithstanding the legal changes, also pressing in matters of freedom of association.

have no bargaining power. The Constitution of 1980 prohibits strike in the public sector, in city halls, and in the essential services in a broad sense:

> State or city hall officials cannot go on strike. Nor can people who work in corporations or companies -regardless of their nature, purposes or function- providing public utility services, or the stoppage of which leads to serious damages to health, the economy of the country, the supply of the population, or national security. The law will establish the procedures to determine the corporations or companies whose workers will be subject to the prohibition of this subparagraph (article 19 No. 16 final paragraph).

The text provides an express prohibition of strike in the public sector and in essential services, leaving the private sector in the dark (when it is not an essential service). In other words, the right to strike had the hierarchy of a law in Chile, and its protection was left to the legislator.[34] Constitutional scholars admitted that the purpose of the restrictive constitutional standard was to limit and compress as much as possible the right to strike.[35]

Since the late 80s, labour scholars tried to interpret that strike in the private sector was a constitutional right, arguing that the Constitution implicitly included the right to strike in the private sector.[36]

In the 90s, scholars also suggested the right to strike based on another constitutional standard. It was the rule on the autonomy of unions (article 19 No. 19 final paragraph). Those who drafted the Constitution were thinking of the administrative and financing autonomy of unions. But its wording gave the idea that said autonomy was also related to the achievement of the union's purposes, including the right to strike as a means to achieve said goals.[37] This was reinforced by international human rights treaties, such as the International Covenant on Economic, Social and Cultural Rights and ILO Convention Nº 87, which, in light of the second subparagraph of article 5 of the same Constitution, was to be promoted and respected by the State.[38] This way, the argument was complete. Despite the current lack of unanimity, the thesis of

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[34] M. Verdugo, E. Pfeffer, H. Nogueira, *Derecho Constitucional*, Volume I, 2nd updated edition, Editorial Jurídica de Chile, 1999, p. 292, and A. Vivanco M., *Curso de Derecho Constitucional. Aspectos Dogmáticos de la Carta Fundamental de 1980*, Volume II, Ediciones Universidad Católica de Chile, 2006, p. 427.

[35] J. Cea Egaña, *Derecho Constitucional Chileno*, Volume II, Ediciones Universidad Católica de Chile, 2004, p. 439.

[36] G. Macchiavello, *Derecho Colectivo del Trabajo*, Editorial Jurídica de Chile, 1989, p. 443 and P. Irureta *Constitución y Orden Público Laboral. Un análisis del art. 19 Nº 16 de la Constitución chilena*, Colección Investigaciones Jurídicas No. 6, Universidad Alberto Hurtado, 2006, p. 187.

[37] S. Gamonal C., *Perspectivas futuras del derecho sindical chileno. Desafíos de nuestro derecho sindical*, in *Revista Derecho y Humanidades*, Universidad de Chile, No. 5, 1997, pp. 104-109.

[38] Id. p. 106.

the constitutionality of the right to strike is a majority among constitutional scholars.[39] As we will see at the end of this paper, this change in interpretation has been relevant to defend the constitutionality of extra-legal strike.

3. Beyond the Labour Plan: The Extra-legal Strike

The fact that strike is very much limited does not mean that there is no conflict. In fact, the number of strikes beyond this limited legal framework is greater than legal strikes.[40]

On the one hand, extra-legal strikes happen much more often than legal strikes.[41] In fact, some economists have said that the excessive formality of our bargaining process encourages the recurrence of strikes and informal bargaining in the private sector, which are more efficient, without burdensome deadlines or excessive legal requirements and formalities, quorums or certifying officers. On the other hand, employers often do not dismiss workers involved in extra-legal strikes, due to the high costs involved in mass dismissals followed by mass recruitment, the selection of new staff, the need to train the recently recruited workers, etc.[42] However, as we will point out later, there are usually dismissals of the leaders of the extra-legal strikes.

For Armstrong, the lack of efficient and fast mechanisms to solve occasional problems or situations, which definitely cannot be resolved by formal collective bargaining, encourages informal strikes and bargaining in the private and public sector.[43]

In addition to this, workers resort to other types of protection, considered a non-standard strike, which, more than a collective absence from work, aims to alter the productive process.[44]

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[39] A. Bronfman, J.I. Martínez, M. Núñez, *La Constitución Comentada. Parte Dogmática. Doctrina y Jurisprudencia*, AbeledoPerrot, 2012, p. 356; A. Silva Bascuñán, *Tratado de Derecho Constitucional*, Volume XIII, Editorial Jurídica de Chile, 2010, p. 338, and H. Nogueira, *Derechos Fundamentales y Garantías Constitucionales*, Volume 3, Centro de Estudios Constitucionales de Chile, Universidad de Talca, Librotecnia, 2009, p. 548.

[40] 62% of strikes in the private sector in Chile, in year 2019, took place beyond the legal framework. See F. Gutiérrez, R. Medel, D. Pérez, P. Pérez, D. Velásquez, Diego, *Informe de Huelgas Laborales en Chile 2019*, OHL Observatorio de Huelgas Laborales, Universidad Alberto Hurtado, Centro de Estudios del Conflicto y la Cohesión Social, 2020. Available in: https://coes.cl/observatorio-de-huelgas-laborales/

[41] R. Águila, A. Armstrong, *Las Huelgas en Empresas del Sector Privado en Chile: 1979-1999*, in *Revista Abante*, Vol. 3, No. 2, 2000, pp. 165-201.

[42] A. Armstrong, *Tendencias, magnitud y causas de las huelgas de trabajadores dependientes de un empleador en Chile*, in *Estudios de Administración*, Vol. 4, No. 1, 1997, pp. 47.

[43] Id. p. 48.

[44] S. Gamonal C., *Derecho Colectivo del Trabajo*, third edition, ediciones DER, 2020, pp. 405-408.

In Chile, there are strikes and conflictive actions which led workers of the Metro (Underground) system to post banners creating awareness of their poor working conditions, or workers of a Call Center who went to work in mourning clothes to denounce their poor working conditions, or workers of a cinema who, faced with the intransigence of their employers, decided to tell the clients the end of the movies at the entrance of the cinema. In less than a week, their demands were heard.[45]

Sociological literature also provides examples of complex and desperate conflictive actions, even of an individual nature, such as hunger strikes[46], suicide[47], and strikes during rest hours[48], i.e., during the workers' free-time, outside the working time and place, such as when, in a mining company, contractors cut the road by which the mine is accessed, affecting its productive process and protesting about their poor working conditions. Those workers who cut the road were not on call, but in their rest hours.[49]

The problem is that, as such strikes and protests are not covered by the legal right to strike, the workers involved in them are exposed to the risk of a disciplinary dismissal, as will be analyzed in the following paragraph.

4. A Modest Balance: Convergence in Courts

Strikes and self-government actions have been suppressed by employers, especially by resorting to the disciplinary dismissal of their leaders.

It is here where both trends meet, as the workers dismissed due to an extra-legal strike claim wrongful discharge and the courts have ruled that, as strike is a constitutional right, the dismissal is indeed wrongful. I.e., the workers were exercising a right.

For example, the Courts of Appeals have declared dismissals due to stoppages caused by the workers to be wrongful. This, as, in their opinion, strike is a constitutional right and, hence, the right to strike is not only subject to the restrictive legal hypothesis of regulated bargaining.[50]

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[45] Gamonal, *supra* note 44, pp. 397-398.

[46] R. Medel, D. Pérez, D. Velásquez, G. Morales, *Huelgas con adjetivo: hacia una diferenciación conceptual de la nueva estructura de conflictividad laboral*, in Aguilar, Pérez and Henríquez (eds.) *Huelgas laborales en Chile. Conciencia y paralización*, Editorial Universitaria, 2017, p. 44.

[47] Id. p. 45.

[48] Id. pp. 46 et seq.

[49] Id. p. 48.

[50] See Case (*Rol*) No. 183-2014, Court of Appeals of San Miguel, of July 9, 2014, and Case No. 1266-2014, Court of Appeals of Antofagasta, of October 27, 2014, commented by S. Gamonal C., *La Huelga como Derecho Fundamental*, in *Revista de Derecho Laboral y Seguridad Social*, Thomson Reuters Chile, No. 4, 2014, pp. 390-393; J.L. Ugarte, *La Huelga en el Derecho Laboral Chileno: Superando el Espejismo*, in *Revista de Derecho Laboral y Seguridad Social*, Thomson Reuters Chile, No.

Furthermore, the Supreme Court, in December 2014, expressly recognized the constitutional nature of the right to strike.[51] In this case, a majority of the Labour Chamber of the Supreme Court (3 out of 5 members) ruled against the internal replacement of workers.[52] Their main reasons can be grouped as follows:

Finalistic interpretation: The Court tells us that the law is to be interpreted from different perspectives: historical, semantic, sociological, teleological, and axiological. And, for the purposes of this case, the Court states that strike is an inalienable right of workers, who lack other peaceful tools to claim their rights (whereas 9 to 12).

Constitutional recognition: The Chilean Constitution, a legacy of Pinochet, recognized freedom of association and collective bargaining and, for the Court, this recognition also includes the right to strike. On the one hand, the Constitution prohibits strike in the public sector, which leads to infer, *contrario sensu,* that it is indeed a right in the private sector. On the other hand, the Constitution provides that collective bargaining is a right of the workers, and the Court believes that if strike is limited or prohibited, the essence of collective bargaining would be affected (whereas 23, 29 and 30).

International Labour Law: The trend in international treaties and human rights declarations is that freedom of association, and thus strike, are fundamental rights. And Chile has ratified the said international instruments (whereas 17 to 21).

Sociological interpretation: From a sociological approach, the Court recognizes the existence of social conflict and the importance of strike in its resolution (whereas 31 to 33).

4, 2014, pp. 63-69, and S. Gamonal C., *Conflicto Colectivo y Huelga Preventiva, Huelga Constitucional y Huelga en base a la Excepción de Contrato no Cumplido*, *Revista de Derecho Laboral y Seguridad Social*, Thomson Reuters Chile, No. 2, 2015, pp. 274-277.

[51] Gamonal, *supra* note 44, pp. 84-85.

[52] Case No. 3.514-2014, of December 4, 2014. This case was about the former article 381 of the Labour Code, which authorized, in some cases, the recruitment of replacement workers during a strike. The problem was in case that the employer did not recruit workers, but rather reassigned tasks among the workers that did not go on strike. Subsequently, in 2016, an amendment prohibited the replacement, but imposed new limits to the right to strike, maintaining the essence of the Labour Plan in force since 1979. See Gamonal, *supra* note 28, pp. 230-236.

The majority of the Court emphatically concludes that: "The right to the declaration of legal strike is sort of an essential crowning of freedom of association, through a regulated exercise of collective bargaining" (whereas 35). The minority vote (2 out of 5 judges) is based on a restrictive interpretation of the right to strike, stressing out that the right to strike must be limited, as it affects the economic development of the country.

Unlike the courts and the Supreme Court, the majority of the Constitutional Court (hereinafter the TC, by its Spanish acronym) sustains a restrictive literal approach in the constitutional interpretation of freedom of association, which could be considered as originalist, in the sense that it is loyal to the neoliberal ideas.

In the ruling about the latest labour reform[53], in 2016, the Constitutional Court interprets the Constitution in light of the ideas of the dictatorship and of the Labour Plan. In other words, freedom of union is interpreted in the sense of turning its back on the international law on human rights and the theory sustained by the Supreme Court in 2014. For the TC, freedom of association only included the right to organize in trade unions, excluding collective bargaining and the right to strike.

The majority of the TC believes that the interpretation of the constitution must not be neutral, but it must rather protect the neoliberal system (p. 49). Additionally, in the opinion of the TC, it must not take into account the international human rights treaties which protect freedom of association in force in Chile, which, according to subparagraph 2 of article 5 of the same Constitution, are to be respected and promoted by the State (pp. 73 and 86).

On the contrary, the minority vote of the TC is consistent with the theory of the Supreme Court, which we already commented.

The current composition of the Chilean TC is conservative, and one of the matters yet to be discussed in the constitutional debate is the need to suppress it or to reduce its powers. For the time being, legal scholars have criticized the TC, exposing its authoritarian approach and against labour rights.[54]

The valuation of these two trends should be modest for the following reasons.

First, there is no unanimity about the scopes of freedom of association in Chile. Beyond the efforts of scholars, the text of the Constitution of 1980 does not help, and currently, the Supreme Court and the Constitutional Court disagree.

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[53] Case No. 3016 of May 9, 2016. Bachelet's reform was presented by her government as an overcoming of the Labor Plan although, in fact, it maintained and even reinforced it. The two amendments declared unconstitutional by the TC was very small progress. In other words, the reform of Bachelet government continued with extreme union parallelism, bargaining at the company level, a very limited right to strike, etc. See Gamonal, *supra* note 28, pp. 225-230.

[54] Gamonal, *supra* note 44, pp. 94-95.

Secondly, dismissal declared as wrongful under the theory of constitutional strike does not imply the reinstatement of the worker, but a further payment regarding severance pay for years of service. This payment depends on the seniority of the worker, thus, if he or she had been working for a short time, he or she will obtain little money. Hence, the cost of the collective conflict for the workers is high, they risk losing their job and even receiving a low compensation after a trial that may last even 1 years.

Therefore, in the current constitutional process, changes are pressing in Chile if the intention is to empower unionism and balance the labour market by recognizing the right to strike as a fundamental right. In 2013, several labor law professors had signed a Labor Manifesto, asking the government for a comprehensive union reform respecting the principle of freedom of association.[55] Currently, academics are once again calling for the new constitution to respect freedom of association and to enshrine the right to strike without limitations, except those recognized by the ILO's Committee on Freedom of Association.[56]

At the time this paper was written, the Constitutional Convention has been in session for three months and is in the process of approving its rules of procedure, so substantive issues, such as freedom of association and other fundamental rights, have not yet been discussed.

5. Conclusions

This paper focused on two phenomena that have attempted to overcome the Labour Plan, a legacy of the dictatorship of Pinochet, regarding the right to strike.

Scholars and the Chilean courts reinterpreted the Constitution of 1980, which only prohibited strike, on the understanding that strike was also a fundamental constitutional right.

Additionally, in practice, strikes have taken place beyond the legal framework in several strategic sectors, and workers have tried to impose measures of pressure beyond the limits of this prohibition legislation.

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[55] S. Gamonal C., *Comentario al Manifiesto Laboral chileno*, in *Revista Internacional y Comparada de Relaciones Laborales y Derecho del Empleo* (*ADAPT*), Vol. 1, N° 3, July-September 2013, pp. 53-62.

[56] See E. Caamaño, *Derecho de Sindicación y Nueva Constitución: La necesaria promoción de la libertad y la autonomía sindical*, in Caamaño y Varas (eds.) *Trabajo y Nueva Constitución*, ediciones DER, 2020, pp. 91-110; K. Varas, *La huelga. Un derecho de primer orden en la nueva Constitución*, in Caamaño y Varas (eds.) *Trabajo y Nueva Constitución*, ediciones DER, 2020, pp. 131.173, and S. Gamonal C., *La negociación colectiva en la nueva Constitución*, in Caamaño y Varas (eds.) *Trabajo y Nueva Constitución*, ediciones DER, 2020, pp. 111-129.

As we already analyzed, both trends have tried to push the limits of the Labour Plan and have converged in the courts, when workers are dismissed due to extra-legal strikes or to the measures of pressure that they have tried to impose beyond the legal limits.

But the results have been modest. In other words, there is still no unanimity as to the scopes of freedom of association in Chile, and the cost of the collective conflict is high for workers, as they risk of losing their job and even receiving a low compensation after a trial that may last for almost 2 years.

Hence, in the current constitutional process, the constitutional changes and the possibility of recognizing strike as a fundamental right are essential to the future of Chilean labour law.

The Three Dimensions of the Indian Wage Code (2019): Shifting Economic, Socio-political and Legal Values?

Catharina Hänsel [*]

Abstract

The value of work is intrinsically linked to its monetary equivalent expressed in wages. Changes in wage laws therefore impact a wide-ranging frontier of tensions inherent in the politics around remuneration, at the individual, the firm and the state level. In other words, wages do not form a single line of conflict, but in fact matters of payment unfold multiple struggles in the spheres of institutions, at the shop-floor and within the household. From this three-fold perspective, the paper analyses unravelling tensions in the economic, legal and socio-political constitution of wages in the Indian Wage Code of 2019. This evaluation shows the importance of strengthening need-based approaches to wages such as minimum wage policies, not just to facilitate decent working standards, but also to guarantee adequate social safety nets, particularly in times of crisis such as the COVID-19 pandemic.

Keywords: Industrial Relations; Labour Law; Minimum Wages; Wage-Price Spiral; Incentive Pay.

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1. Introduction

During the COVID-19 pandemic, India initiated a major labour law reform which had been discussed for the last two decades. This reform aimed at consolidating 44 central and about 100 state labour laws into four Codes, viz. the Wage Code (2019), the Industrial Relations Code (2020), the Code on Social Security (2020), and The Occupational Safety, Health and Working Conditions Code (2020). While this reform has been largely welcomed by Indian employers, it has received criticism from all major trade unions as well as the International Labour Organisation (ILO). According to the ILO's statement from May 2021, the international organisation was investigating the compliance of the new labour Codes with Convention No. 144 on tripartite consultations.[1] This raises the issue of which standards are appropriate to analyse the new legal system. What would be the substantive measure to determine whether the ILO's constitutional principle of the "provision of an adequate living wage" have been met under the new Codes?[2] The four labour Codes have received wide scholarly attention, particularly with regards to the health emergency in which they were passed, and their implications for workers,[3] as well as with the devastating effect they could have on the role of already weakened trade unions in India.[4] The Wage Code has predominantly received attention on specific issues, particularly the provision of adequate minimum wage standards and its potential implications for the labour market.[5] However, these analyses do not take into account the implications of the changes in wage determinations on industrial relations systems. In order to analyse the implications of the new Wage Code on remuneration and the value of work, it is necessary to define wage matters not as a one-dimensional line of

[1] The ILO Convention No. 144 on Tripartism seeks to strengthen social dialogue between employers, workers and government institutions. For the full text of the convention, see: https://www.ilo.org/dyn/normlex/en/f?p=1000:11300:0::NO:11300:P11300_INSTRUMENT_ID:312289 (accessed July 1, 2022).

[2] This principle is also enshrined in the UN Declaration of Human Rights, 1948 in Art. 23 para. 3.

[3] E.g. Srivastava, R., Growing precarity, circular migration, and the lockdown in India. *The Indian Journal of Labour Economics*, vol. 63, n. 1, 2020, 79-86; Breman, J, The pandemic in India and its impact on footloose labour. *The Indian Journal of Labour Economics*, vol. 63, n. 4, 2020, 901-919; Satpathy, A., Estupinan, X., & Malick, B. K., Strengthening Wage Policies to Protect Incomes of the Informal and Migrant Workers in India. *Labour and Development, VV Giri National Labour Institute*, 2021.

[4] Shyam Sundar, K. R., Critiquing the Industrial Relations Code Bill, 2019. *Economic and Political Weekly*. vol. 55, n. 32-33, 08 Aug, 2020.

[5] Kapoor, R., COVID-19 and the State of India's Labour Market. *ICRIER policy series*, 18, 2020, 1-7; Kapoor, S., A Critical Analysis of The Code On Wages 2019: Need For Right To Minimum Wage. *Indian Journal of Law and Legal Research*, vol. 2 n. 1, 2021, 296-306.

conflict, but instead understand its economic, legal and socio-political constitution.

These three intersecting spheres shape the way wages are negotiated. At the economic level, this particularly relates to the nature of the labour market and the conceptualisation of the relationship between wages and prices – both as "price" for labour inputs as well as prices for workers' cost of living.[6] In other words, both the moment of production (shop-floor) and of reproduction (household) need to be investigated. Wage inequalities in India have often been studied under the concept of segmented labour markets,[7] highlighting the difference between the organised and the unorganised employment sectors,[8] leading to varying degrees of informal working conditions.[9] However, in these models, wages are often used as a marker of a certain outcome of segmentation, rather than looking at the processes by which these binaries are put into practice.[10] The paper seeks to complicate this perspective by analysing how wages are not only shaped by segmentation but also how certain wage setting practices contribute to social inequalities.

Further, in these models, binary labour markets are framed by the idea that informality is a consequence of missing implementation of the law,[11] without recognising how Indian labour law creates graded scales of inclusions and

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[6] Rubery, J. Johnson, M. and D. Grimshaw, *Minimum Wages and the multiple functions of wages*. London, Routledge, 2021. They identify five functions of wages: 1) wages as price of labour 2) wages as living costs, 3) wages as class distribution, 4) wages as social practice and 5) wages to control the labour process.

[7] Bardhan, K., Economic growth, poverty and rural labour markets in India: a survey of research. *ILO Working Papers*, (992228833402676), 1983.

[8] Mazumdar D. and Sarkar, S., *Globalization, Labor Markets and Inequality in India*. London, Routledge, 2008.

[9] Jens Lerche, *From 'rural labour' to 'classes of labour': Class fragmentation, caste and class struggle at the bottom of the Indian labour hierarchy*. London, Routledge, 2009, 90-111; Henry Bernstein 'Capital and Labour from Centre to Margins'. Keynote speech at the conference 'Living on the Margins', Stellenbosch University (26–28 March 2007). http://pdf.steerweb.org/WFP%20ESSAY/Bernstein_dsi.pdf (accessed June 7, 2022); Jan Breman, *At Work in the Informal Economy of India: A Perspective from the Bottom Up*. Delhi, Oxford University Press, 2013; Jan Breman and Marcel van der Linden, Informalizing the Economy: The Return of the Social Question at a Global Level, *Development and Change*, vol. 45, n. 5, 2014, 920–40.

[10] Anant, T. C. A., Hasan, R., Mohapatra, P., Nagaraj, R., & Sasikumar, S. K., Labor Markets in India: Issues and Perspectives. In J. Felipe & R. Hasan (Eds.), *Labor Markets in Asia: Issues and Perspectives,* 205–300. Palgrave Macmillan UK, 2006.

[11] Jayaram, N., Varma, D. Examining the 'Labour' in Labour Migration: Migrant Workers' Informal Work Arrangements and Access to Labour Rights in Urban Sectors. *Indian Journal of Labour Economics* Vol. 63, 2020, 999–1019.

exclusions.[12] The unevenness of the application of law has to be analysed by extending the scope of the regulatory sphere in question – in other words, which institutions are involved in the making of industrial relations? Apart from labour laws, this involves decisions by labour courts and the mechanisms of collective bargaining, whether in tripartite, bipartite forums or "voluntary" agreements between parties involved.[13] This concerns the extent of the state's engagement in the wage negotiation process. Given the relative weakness of the trade union movement particularly in the low-earning sections of the workforce,[14] state-determined minimum wages have often been cited as an argument to strengthen workers' organisations. This further relates to the state's role within the bargaining process and the extent to which legal and judicial provisions can safeguard workers' earnings without becoming too rigid.[15] Further, the reorganisation and transformation of work in the context of platform work and other shifts in labour supervision towards more indirect forms of oversight — controlled by algorithms which often disguise work as self-employment — make it more difficult to hold employers accountable for the payment of wages.[16] This raises the question whether those matters should

[12] Shyam Sundar, K. R., Labour Flexibility Debate in India: A Comprehensive Review and Some Suggestions, *Economic and Political Weekly*, vol. 40, n. 22/23, 2005, 2274–85.

[13] There is a growing body of literature analysing voluntary grievance mechanisms and the role of businesses in fostering their own internal cultures of conflict resolution and remedy provision in case fundamental rights have been violated at work. See, for example, Smit, L. Gabrielle Holly, McCorquodale, R. & Stuart N., Human Rights Due Diligence in Global Supply Chains: Evidence of Corporate Practices to Inform a Legal Standard, *The International Journal of Human Rights*, vol. 25 n. 6, 2021, 945-973. Olivier De Schutter, Towards a New Treaty on Business and Human Rights, *Business and Human Rights Journal,* vol. 1 n. 1, 2016, 41-67; John G Ruggie, Business and human rights: the evolving international agenda, *American Journal of International Law,* vol. 101 n. 4, 2007, 819-840. However, these claims are often framed in addressing issues of "human rights" at work, rather than labour rights.

[14] Harriss-White, B., Inequality at work in the informal economy: Key issues and illustrations. *International Labour Review*, 2003, 142, 459.

[15] Many scholars have evaluated to what extent a quantification of minimum wages by the government bears the risk of crowding out employees. Moreover, examples in Europe show how slow mechanisms of adjustments also negatively impact workers and make trade unions cautious in their demands for minimum wages Hancké, B., Why Trade Unions have a Problem with the Minimum Wage, LSE Blog, https://blogs.lse.ac.uk/europpblog/2021/11/30/why-trade-unions-have-a-problem-with-the-minimum-wage-and-what-can-be-done-about-it/ (accessed July 4, 2022).

[16] These two shifts are not only observable in the Global South in countries like India, but seem to indicate a global trend. Discussions on whether governments should extend and universalise the coverage of labour law have also been held in the context of the European Pillar of Social Rights. See, for example, De la Porte, C., The future of EU social and labour market policy: Between a European social union and an EU regulatory welfare state? In

be addressed through a labour lens or through a more, universal social citizenship lens.[17]

Socio-political power permeates and shapes labour markets, industrial relations, and working-class households.[18] Building on White's framework of market politics, the paper investigates the Wage Code at three intersecting frontiers of wage negotiations: 1) The sphere of industrial relations and shop-floor negotiations - How is the relation and valuation between workloads and wages shaped by political power? 2) The legal-institutional framework – Is the Code adequate to address power imbalances between actors involved in the bargaining process (trade unions, business associations, individual workers, firms, and the state)? 3) The sphere of reproduction and consumption - How are calculations of "cost of living" as basis for minimum wage claims part of a wider nexus of social inequalities based on caste, class and gender (e.g. the idea of the male breadwinner as the sole earner)?

The paper is structured as follows. The second part outlines the analytical spheres of investigation, defining which issues need to be accounted for when framing the Indian labour market for an analysis of the new Codes. Moving beyond the neoclassic idea of wages as mere indicators of labour market equilibria, this section shows how the need for a multi-perspective understanding of wages results from the incomplete commodification of work. Given that wages include both reproductive (in terms of need-based calculations) as well as productive (in the sense of labour process-related) considerations, these tensions are sketched out as frontiers which laws on remuneration need to incorporate. These frontiers occur in relation to different components of the wage (basic wage, dearness allowance, bonus payments) as well as the labour process and legal institutions in which negotiations may take place. The third part evaluates the Wage Code based on this model, taking into consideration the broader context of labour law reform in India. Given that the Wage Code merges four laws concerning wages from before the reform, the focus lies on the continuities of exclusions of certain sections of the workforce in the structure of the Code. This also requires a historical review of the emergence of these wage laws in India. The fourth part revisits the idea of wage frontiers based on the concrete examples of the Wage Code, arguing that the power imbalances at the shopfloor are not adequately addressed (question

Damro, C., Heins, E. and D. Scott (eds.) *European Futures: Challenges and Crossroads for the European Union of 2050*, 58-73, London, Routledge, 2021.

[17] Standing, G., The precariat: Today's transformative class?, vol. 61 n. 1, 2018, *Development*, 115-121.

[18] For the constitution of political power and its relation to the labour process, see for example, Burawoy, M., The capitalist state in South Africa: Marxist and sociological perspectives on race and class. *Political Power and Social Theory*, vol. 2, no. 81, 1981, 279–335.

1), thereby containing significant implications for the sphere of reproduction and industrial relations (questions 2). This evaluation concludes with underlining the importance of the state in strengthening need-based approaches to wages such as minimum wage policies, not just to facilitate decent working standards, but also to guarantee adequate social safety nets, particularly in times of crisis such as the COVID-19 pandemic (question 3).

2. The Labour Market: Economic, Socio-Political and Legal Frontiers

2.1 Framing the Labour Market

2.1.1 Economic Frontiers

Neoclassical economics defines the labour market as a locus of commodity exchange not much different from any other goods.[19] In these models, wage rates are based on the marginal productivity of the work performed, or in other words, the productivity gain of the firm resulting from one additional unit of either another employee or one extra hour of work. However, even under the assumption of perfect equilibria between work supply and demand which determines the wage rate, three major problems remain. First, the existence of multiple, segmented labour markets, varying in degrees of (in)formality, regulated through social factors.[20] Even before the economist Clark Kerr proposed his idea of the "Balkanisation of labour markets" (1954) in the US as well as in developing economies,[21] colonial authorities divided "traditional" and "modern" sectors of the Indian economy – with generally handicraft and agricultural production falling into the first category.[22] These definitions have been extended, including geographical segmentations,[23] those based on skill,[24]

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[19] E.g. Smith, R. S. and Ehrenberg, R. G., *Modern Labor Economics: Theory and Public Policy (12th Edition)*, Hoboken, Prentice Hall, 2014.

[20] Rubery, J., Wages and the Labour Market. *British Journal of Industrial Relations*, vol. 35 n. 3, 1997, 337–366.

[21] Kerr, C.; *The Balkanization of Labor Markets*. Reprinted by permission from Labor Mobility and Economic Opportunity, The Technology Press of M.I.T., and Wiley. Copyright: 1954 Massachusetts Institute of Technology. University of California Press, 2020.

[22] Mohapatra, P. (2005). Regulated Informality: Legal Constructions of Labour Relations in Colonial India. In Bhattacharya, S., Lucassen, J. (eds.), *Workers of the Informal Economy: Studies in Labour History*, 1800-2000, Delhi: Macmillan India, 2006; Behal, R. P. & Mohapatra, P. P., Tea and money versus human life: The rise and fall of the indenture system in the Assam tea plantations 1840–1908, *The Journal of Peasant Studies*, vol. 19 n. 3-4, 1992, 142-172; Stanziani, A., *Labor on the fringes of empire: voice, exit and the law*, 2018, London, Palgrave Macmillan.

[23] Papola, T. S., Inter-regional variations in manufacturing wages in India: Industrial structure and region effects. *Indian Journal of Industrial Relations*, vol. 7 n. 3, 1972, 355–376.

the "organized" and the "unorganized"[25] with a measurement of degree of access to the state[26] as well as based on discrimination due to caste, gender and religion.[27] In the model on segmented labour markets and social factors introduced by Rubery, wages not only perform a signalling function for the degrees of segmentation, but also in turn divide the labour force by endowing working class households with varying degrees of purchasing power and therefore economic capacities for participation in the labour market. In other words, whoever is poor is very likely to remain so in segmented labour market scenarios.[28]

Second, the imperfect nature of labour as a commodity, given that the employer only buys a workers' labour power, which however, is physically and practically indistinguishable from the person who performs the work and is subject to needs of reproduction and rest.[29] This significantly complicates the determination of the value of labour power, as it already includes a tension between need-based aspects of wages and the necessity to earn enough to enable adequate consumption (i.e. the use-value in the terms of Marx) on the one hand, and the "cost of labour" in production (exchange value).[30] These may not be coinciding with each other – need based calculations may

[24] Dayal, S., Wage Policy in India: A Critical Evaluation. *Indian Journal of Industrial Relations*, vol. 6 n. 2, 1970, 149–170.

[25] E.g. Rani, U., & Unni, J., Unorganised and organised manufacturing in India: Potential for employment generating growth. *Economic and Political Weekly*, 2004, 4568-4580; Harriss-White, B., & Gooptu, N. Mapping India's world of unorganized labour. *Socialist Register*, 37, 2001.

[26] Kumar, A., Hashmi, N.I., Labour Market Discrimination in India. *Indian Journal of Labour Economics,* vol. 63, 2020, 177–188.

[27] Deshpande, A., Goel, D., & Khanna, S., Bad karma or discrimination? Male–female wage gaps among salaried workers in India. *World Development*, *102*, 2018, 331-344; Deshpande, A., The Covid-19 pandemic and gendered division of paid work, domestic chores and leisure: evidence from India's first wave. *Economia Politica*, 2021, 1-26.

[28] Rubery, J., Wages and the Labour Market. *British Journal of Industrial Relations*, vol. 35 n. 3, 1997, 337–366.

[29] Prasch, R. E., How Is Labor Distinct from Broccoli? Some Unique Characteristics of Labor and Their Importance for Economic Analysis and policy. In Champlin, D. P., Knoedler, J. T. (eds.), *The Institutionalist Tradition in Labour Economics,* London, Routledge, 146-158.

[30] While neoclassical economists have been mostly occupied with the exchange value of labour with wages as the price of the marginal product of labour, Marxist economists have been mostly struggled with the conversion of values and the production of surplus value under the capitalist labour process into prices. On the transformation problem, see Shaikh, A., The transformation from Marx to Sraffa. Ricardo, Marx, Sraffa, In Ernest Mandel, and Alan Freeman (eds.) *Ricardo, Marx, Sraffa, The Langston Memorial Volume*, London, Verso, 1984, 43-84; and Fine, B., The Value Dimension (Routledge Revivals): Marx versus Ricardo and Sraffa, London, Routledge, 2013.

determine higher or lower requirements of wage payments than the rates paid by the industry.[31]
Third, in order to account for the power dynamics of markets, White introduces the concept of *market politics* to provide analytical tools for understanding the "inter-relations between economic, social, cultural and political phenomena."[32] He identifies the involvement of the state in terms of regulation of markets, participatory processes and distributions of power as one of the primary arenas of market politics, along with market organisation (and associations dominating the market such as trade unions and business associations), the economic structure and distribution of economic power, and social embeddedness of the market. Taking these factors into account allows to take a step back from equilibria approaches and to think about the fragmentary process of wage politics.

2.1.2 Frontiers of Social Reproduction

Thus, the model of the labour market needs to be extended in two directions: one, to include issues of social reproduction and two, to account for the working of political institutions and the law. In order to understand scenarios in which wage rates lie below subsistence standards, Moes and Bottomley have contended that an over-supply of labour would be responsible for such levels.[33] High competition of workers would lead to starvation wages, which in turn would hamper efficiency due to lack of adequate nutrition to perform workloads required. They postulate that these economies could exit the deadlock of such low-level equilibria by paying higher wages, which would in turn raise the ability of households to spend more on their nutrition and health. This would not only benefit working class households, but also employers who would have in turn access to a more productive workforce, thereby able to receive higher returns on their labour investments.[34] However, this approach needs to be problematised. As Rodgers has argued,

[31] Sharif, M., The concept and measurement of subsistence: A survey of the literature. *World Development*, vol. 14 n. 5, 1986, 555-577.
[32] White, G., Towards a Political Analysis of Markets. *IDSB IDS Bulletin*, 1993, vol. 24 n. 3, 4.
[33] Moes, J. E., & Bottomley, A., Wage rate determination with limited supplies of labour in developing countries. *The Journal of Development Studies*, vol. *4* n. 3, 1968, 380-385.
[34] Theories of "efficiency wages" are not just applied to economies of the Global South, but also in the Global North. See, for example Krueger, A. B., & Summers, L. H., Efficiency wages and the inter-industry wage structure. *Econometrica: Journal of the Econometric Society*, 1988, 259-293.

> wage levels … depend not only on economic and nutritional factors, but also on a host of institutional variables involving the local power structure, moral judgements of desirable living standards for labourers and their dependants, preferences for stability and so on[35].

Therefore, there are several core issues which need to be addressed: Difference in consumption choices between and within households (e.g. notions of family wages and gender imbalances), as well as the impact of "institutional factors and government policy" on wage determination.[36] Further, it needs to be recognised that the process of wage determination is not simply given by economic variables such as production and nutrition, but depends on social configurations of political power, both in negotiations with the state and employers. Therefore, dynamics of bargaining processes, campaigns and other struggles need to be considered – particularly where workers' positions are weakened due to their low economic power.

2.1.3 Legal Institutions and Collective Bargaining

Economic imbalances of power also affect the working of political institutions and the state. How are these institutions shaped by these differences in capacities, or to what extent can they aid in overcoming such discrepancies? The sociologist Budd has shown that the recognition of the complex tensions around the value of labour have been incorporated in three different strands of theory: a) Human Resources Management, b) Industrial Relations and c) Critical Industrial Relations.[37] These approaches would particularly vary with regards to the approach to (wage) bargaining – while Human Resources Management would highlight the significance of the individual contract between employer and employee, industrial relations would be concerned with the unequal bargaining power between workers and those offering work and therefore stress the need for collective bargaining. Meanwhile, Critical Industrial Relations would be concerned with the nature of the state and the conditions it sets for labour relations.[38]

As part of the Critical Industrial Relations school, Dukes and Streek have highlighted the importance of the beginning of the twentieth century for the emergence of labour laws under the competing legal frameworks of general

[35] Rodgers, G. B., Nutritionally based wage determination in the low-income labour market. *Oxford Economic Papers*, vol. *27* n. 1, 1975, 79.

[36] Harris, J. R. Wage rate determination with limited supplies of labour in developing countries: A comment, *The Journal of Development Studies*, vol. 7, n. 2, 1971, 200.

[37] Budd, J. W., Labour Relations. Striking a Balance. Fifth edition, New York: Mc Graw Hill Education, 2017.

[38] Hyman, R., Industrial Relations. A Marxist Introduction, London, Palgrave Macmillan, 1975.

contract law, and the specific needs of workers as human beings - resulting in the emergence of institutions to create a structure for procedural, inclusive law-making.[39] From their perspective, therefore, any law which facilitates institutions to strengthen workers' material position for better bargaining capacities should be politically welcomed. This can even include statutory provisions such as the minimum wage.[40] Such institutions could be formed at the firm or sectoral level (e.g. collective bargaining, works councils), or with the help of the state (tripartite forums). In this case, even a state which may be inherently unequal in terms of economic distribution could still hold transformative potential if it provides for adequate wage laws.

2.2 The Frontiers of Wage Law

Approaching wages from these three sides (economic, socio-political, legal), the forms of conflict lines occur at the intersection of those spheres. These frontiers will be used as a basis for the analysis of the Wage Code. First, this dissects the wage into different components, with not all sections of the workforce able to claim all of them. In India, the term 'wages' relates to the payment of a basic rate, dearness allowance as a compensation for inflation as measured by the Consumer Price Index (CPI), and bonus payments related to company profits. Due to its direct connection to prices, dearness allowance payments relate to the purchasing power of the household even more directly than basic wages and can therefore be defined as one of the frontiers of social reproduction. Dearness allowance, part of every labour contract, is paid to all public sector employees as well as all formal private sector employment. To gain insights into the practice of such payments, the Pay Commission reports of the government are of particular importance, providing a mandatory framework for public employment and a reference point for private companies. From these reports it becomes clear that in government employment, the dearness allowance component of the wage is currently 31 per cent.[41] This affects remuneration in two significant ways. 1) Given that

[39] Dukes, R. and Streek, W., From Industrial Citizenship to Private Ordering? Contract, Status and the Question of Consent. *Max-Planck-Institut für Gesellschaftsforschung Discussion Paper 20/13, 2020.*

[40] Dingeldey, I., Grimshaw, D., & Schulten, T. (eds.), *Minimum Wage Regimes: Statutory Regulation, Collective Bargaining and Adequate Levels*. London, Routledge, 2021.

[41] In other sectors, the dearness allowance component can be even higher than the basic wage. Government of India, Department of Expenditure, *Revised rates of Dearness Allowance to the employees of Central Government and Central Autonomous Bodies continuing to draw their pay in the pre-revised pay scale/Grad Pay as per 6th Central Pay Commission w.e.f. from 01.07.2021.* https://doe.gov.in/Dearnes-Allowance, (accessed December 16, 2021).

social security benefits are linked to the payment of basic wages, such benefits can remain stagnant over decades since the number of basic rates hardly rises compared to the dearness allowance component. 2) Depending on the so-called "linking factor" between the CPI and the payment of the government, dearness allowance payments only compensate for a certain percentage of the rises in the CPI. The most recent report of the Seventh Pay Commission (2017) prescribes a compensation rate of 100 percent for public sector employees.[42] However, these compensation rates may be lower in other sectors. This means that a rise in the CPI does not always get translated into a corresponding rise in dearness allowance and real wages effectively fall. Regarding bonus payments, there are different types of bonus models, relating to issues of distributing profits and the determination of added value of workers within the labour process, while also functioning as an instrument of control (e.g. attendance bonus, efficiency bonus). This is why definitions of wages matter in the law and need to be observed closely.

Matters of bonus also relate to a second frontier connected to labour process regimes, dynamics of intensification and extensification of work, enabled through varying degrees of control.[43] Wages not only express hierarchies at the shop-floor, but are also an active instrument of control and incentivisation.[44] Bonus payments are one of such instruments, but modalities of payment (e.g. piece rates and time rates) are also of relevance here. Subsistence level earnings may be particularly endangered in piece rated occupations, as these rates only prescribe a certain output without limiting the working time necessary to achieve such remuneration levels.[45] This problem may be further aggravated

[42] Government of India, Department of Expenditure, *Report of the Seventh Pay Commission,* 2017. https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwjgzfPb5N34AhUJr6QKHU8VAC4QFnoECAcQAQ&url=https%3A%2F%2Fdoe.gov.in%2Fseventh-cpc-pay-commission%3Fpage%3D1&usg=AOvVaw0FECRN1wfzfwp-xgAt1q4M, (accessed July 4, 2022.

[43] Braverman, H. *Labor and monopoly capital: The degradation of work in the twentieth century*. New York, NYU Press, 1998. Thompson, P., The capitalist labour process: Concepts and connections. *Capital & Class*, vol. 34, n. 1, 2010, 7-14; Thompson, P., & Laaser, K., Beyond technological determinism: revitalising labour process analyses of technology, capital and labour, *Work in the Global Economy*, vol. 1 n. (1-2), 2021, 139-159.

[44] Forms of hierarchies could also include varying degrees of skill, age and/or number of years worked at the firm. On the relation between skills and the sector of "unskilled" work in India, see Rajendra, A., Skills in 'Unskilled' Work. A Case of Waste Work in Central India, *Third World Quarterly*, 2022.

[45] Piece rates are defined as wages which are paid based on a given output quantity. However, this does not necessarily indicate that piece-rated workers would have different payment cycles than time-rated workers, they may be similar or overlap. There is little data on the frequency,

with emerging fluidity between time rated and piece rated components of wages. In recent years, platform work (or gig work), which is usually not remunerated by the hours worked but by the amount of tasks performed, has received considerable attention.[46] Such studies have generally focussed on the decentralisation of control in the form of platform work and impersonal, algorithmic supervision,[47] as well as on the employment status of such gig workers.[48] These changes in management practices have further weakened the power of the individual worker over the labour process, given that it has become much harder to access the employer. Further, indirect incentive systems make it trickier to employ strategies of everyday resistance without facing immediate cuts in wages or loss in employment.[49] This has particularly drawn the attention to the state and law-makers in order to introduce new work regulations addressing changing modalities of remuneration resulting from shifts in working conditions and workplace organisation.

However, the example of platform work particularly shows how wage politics is not only depending on workplace conditions, but also on access and power over the law-making process. Therefore, as a third line of conflict, the dynamics of legal institutions need to be investigated. India is a federal state with labour law included in the Concurrent list of the Constitution, which means that both the Central and State governments can participate in the legislative process.[50] States can amend central rules, which has been done extensively, for example by individually adjusting working time directives during the Covid pandemic. For example, while the Central Factories Act prescribes a maximum of eight hours work per day, several states such as Uttar Pradesh, Rajasthan, Himachal Pradesh and Gujarat extended their working

modality and periods of time and piece-rated work in India, but this would be highly crucial for a further investigation on the correspondence between legal standards and economic realities.

[46] Rani, U., & Dhir, R. K., Platform work and the COVID-19 pandemic. *The Indian Journal of Labour Economics*, vol. *63* n. 1, 2020, 163-171.

[47] Verma, R. K., Ilavarasan, P. V., & Kar, A. K., Inequalities in Ride-Hailing Platforms. In Atique, A., Parthasarathi, V., *Platform Capitalism in India*, 177-198, London, Palgrave Macmillan, 2020.

[48] Kasliwal, R., Gender and the Gig Economy: A Qualitative Study of Gig Platforms for Women Workers. *Observer Research Foundation, ORF Issue Brief*, n. 359, 2020.

[49] Ara, I., Urban Company Sues Workers for Protesting Against 'Unfair Labour Practices'. Protest Called Off, https://thewire.in/rights/urban-company-sues-workers-for-protesting-against-unfair-labour-practices-protest-called-off, The Wire, 23.12.2021, (accessed July 4, 2022).

[50] On the jurisdiction of labour under the constitution, see Constitutional Provisions by the Ministry of Labour, https://labour.gov.in/constitutional-provision (accessed July 4, 2022).

hours up to 12 hours.[51] Therefore, the relation between economic and political power within institutionalised frameworks, codes of conducts, and organisations has to be unpacked at several scales: at the central, state, and sectoral levels, as well as bargaining procedures within the firm. A closer look at the Wage Code not only illuminates some aspects of inclusion and exclusion in legal procedures, but also of workplace conflict lines and household consumption.

3. Situating the Wage Code of 2019 in India's Labour Law Framework

3.1 The Labour Law Reform 2019-2020

Recognising the need for labour law reforms due to their parallel (and partly incompatible) nature, the Second National Commission on Labour in 2002 had recommended to streamline existing laws in order to make them more compatible with each other.[52] As observers have highlighted, both Congress-led governments as well as the Bharatiya Janata Party currently in power have shared the aim to initiate labour law reforms. After two decades of consultations with business associations and trade unions, the Labour Ministry passed the Wage Code in 2019, followed by Occupational Safety, Health and Working Conditions Code, the Industrial Relations Code, and the Social Security Code in 2020. This did not happen without resistance – on 8 December 2020, leading Indian trade unions had organised a general strike in fear of weakening labour rights and social protection standards.[53] It is expected that these new laws concern 500 million employees.[54]

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[51] PRS Legislative Research, Relaxation of labour laws across states, *PRS Online Blog*, 2020, https://prsindia.org/covid-19/covid-blogs/relaxation-of-labour-laws-across-states-34, (accessed July 4, 2022).

[52] Government of India, *Report of the Second National Commission on Labour, 2002*, https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwjAycHy5d34AhUouaQKHflVDGQQFnoECAUQAQ&url=https%3A%2F%2Fvvgnli.gov.in%2Fsites%2Fdefault%2Ffiles%2FReport%2520of%2520the%2520Second%2520National%2520Commission%2520on%2520Labour%2520Vol.%2520I.pdf&usg=AOvVaw0G5jPMgR1jhQZcOnErwxHG, (accessed July 4, 2022).

[53] Several national unions had called for the strike, including Indian National Trade Union Congress (INTUC), All India Trade Union Congress (AITUC), Hind Mazdoor Sabha (HMS), Centre of Indian Trade Unions (CITU), Self-Employed Women's Association (SEWA), United Trade Union Congress (UTUC) as well as protesting farmers. Times of India, *Trade unions support farmers agitation, saying Bharat Bandh on December 08 Successful*, December 11, 2020, (accessed July 4, 2022).

[54] Parliament passes Wage Code Bill to ensure Minimum Wages to Workers. Economic Times, 02.08. 2019, (accessed July 4, 2022).

Since the Wage Code determines *who* is considered a wage earner, i.e. a person in employment, it has significant implications for the other three Codes as well. The Wage Code Bill opens up several divisions, and earners have to ask themselves the following questions: Is my work regarded as work? Otherwise, I am not part of any wage legislation. How much is my pay worth in relation to prices and profits? In other words, the skewed definitions of a 'wage earner' arbitrarily determine and thereby hollow out the social security entitlements and protections defined under the other three Acts. The following sections analyse how the three spheres of collective bargaining relations at the shopfloor (production), minimum standards of consumption (reproduction) and the legal-political sphere of state regulation become articulated in the Wage Code. In order to understand the shifts and continuities in the new laws, those sections draw on a larger historical lineage of wage regulation in India.

3.2 Frontiers of the Wage Code, 2019

3.2.1 The Legal Sphere of Wages in India

The legal framework of labour regulation emerged particularly out of the tensions arising of the two World Wars, its rising profits, and social movements it brought about.[55] At the end of the First World War, workers' demands became a pressing issue at the national as well as international level. India became one of the first states to join the ILO in 1919 as a separate delegation from the British colonial government. Thus, India's move to join the ILO has generally been interpreted by historians as a crucial step towards independence.[56] Faced with growing political resistance, increasing economic strength of Indian businesses, and workers demanding their share in war-time profits, the British government passed its first law regulating social security: The Workman's Compensation Act, 1923. This law laid out a compensation scheme for injured workers for the first time, thereby crucially determining who was included and excluded from the definition of a "workman",

[55] On the importance of the 1940s as a period of emerging labour regulation, see Ravi Ahuja "Produce or Perish'. The crisis of the late 1940s and the place of labour in post-colonial India', *Modern Asian Studies,* vol. 54, n.4, 2020.

[56] Rodgers, G., India, the ILO and the Quest for Social Justice since 1919. *Economic and Political Weekly*, 2011, 45–52; Van Daele, J., Van Goethem, G., & Rodríguez García, M. (eds.), *ILO Histories Essays on the International Labour Organization and Its Impact on the World During the Twentieth Century*. Peter Lang AG, Internationaler Verlag der Wissenschaften, 2011. Mosse, David, D., 'Help Them Move the ILO Way': The International Labour Organization and the Modernization Discourse in the Era of Decolonization and the Cold War. *Diplomatic History*, vol. 33 n. 3, 2009, 387–404.

depending on the nature of wage-based work.[57] With the Act of 1923 being merged in the Social Security Code of 2020, these definitions still form the core of employment relationships today. This was further expanded with the Payment of Wages Act in 1936, a law to distinguish between legal and illegal fines to be deducted from wages.[58] By introducing differentiated rights based on the number of wages paid, this contributed to distinctions between wage earners. The mode of payment, including periods of pay as well as the legitimisation of deductions became dependent on these divisions. Emerging out of the British Royal Commission on Labour (1928), this was the beginning of a long series of categorization of wage levels and job roles continuing until today. Further, the Act raised the question whether "wages" would consist of dearness allowance as inflation compensation and an additional bonus or should simply take into account a "basic" time or piece rated wage. In a number of cases in the Bombay High Court during the 1940s and 1950s, the dearness allowance and the bonus component became detached from the basic wage in terms of legal definitions.[59] The Payment of Wages Act, 1936 therefore significantly contributed to the creation of the partly overlapping, parallel legal structure that the Labour Code in 2020 aimed to address.

This structure was further expanded after the Second World War. With large-scale strikes in all major industrial centres, the government passed the Industrial Disputes Act in 1947 to regulate the negotiation process between employers and employees. The Act became the centre-piece of tripartite relations in India. In order to avoid strikes, it sought to nominate representative trade unions designated to negotiate with employers on behalf of workers in a given enterprise. However, it also led to the exclusion of those trade unions who were not recognised by the state, thereby foreshadowing the weakness of the union movement, particularly in the unorganised sector today.

However, in the 1980s, the Supreme Court acknowledged the differentiation between general Contract Law and contracts regarding labour relations. In Central Inland Water Transport Corporation Ltd. v. Brojo Nath Ganguly & Anr. 1986, Justice (Judge) D.P. Madon and A.P. Sen recognised the "inequality of bargaining power" between employers and employees as the "result of the great disparity in the economic strength of the contracting parties."[60] By taking

[57] On the Workman's Compensation Act, see Vijayaraghavan, L., Labor Standards and the Workmen's Compensation Act: A Study of Indian Law and Cases. *ICFAI Journal of Employment Law*, vol. 7 n. 1, 2009.

[58] Government of India, The Payment of Wages Act, 1936 (No. 4 of 1936).

[59] State Of Bombay vs K. P. Krishnan and Others, 18 April, 1960, 1960 AIR 1223. See the discussions and summaries of previous discussions in *Circular of Employers Association of Northern India*, Cawnpore 17.1.1940.

[60] 1986 AIR 1571, 1986 SCR (2) 278, Abs. 2.4

into account these power imbalances between the individual worker and the hiring firm, this judgement marked a landmark case in the country, since it recognised the need for collective organisation of workers resulting out of their relative weakness vis-à-vis employers.

The Wage Code does not always explicitly recognise this unequal bargaining relation. As a minimum requirement, a company needs to employ more than 10 people for the laws to apply. In order to file a complaint against misconduct or non-payment of wages, one has to identify the principal employer. This is not often easy due to sub-contracting and those categorised as "self-employed", e.g. in the case of street vendors or gig workers.[61] In the name of formalization, these workers would be left out by the new Act, especially home workers, particularly women.[62] Further, the Wage Code contains references to different definitions of wage earners varying between "workers", "employees" and "gig workers" without indicating the specificities of each category justifying these distinctions.[63]

Further, there is only meagre security of enforcement. The 'inspector of the law' is now an "inspector-cum-facilitator",[64] thereby highlighting the dominant purpose of the law to assist a smooth business process rather than guaranteeing labour rights. Even if any misconduct by employers is detected, the maximum fine is capped at Rs. 50,000, and Rs. 1,00,000 or imprisonment up to three months in case of a second violation of employee's rights within a period of five years.[65] Even though the Parliamentary Standing Committee on Labour found that this would be too low as a punishment, this has not been altered before implementation.

3.2.2 The Scope for Shop-floor Negotiations and Managerial Control in Wage Laws

These variations in definitions have far-reaching implications at the shopfloor with regards to management practices as well as the scope it would leave for bargaining. In an attempt to encourage voluntary agreements between employers and employees, the new Codes supports the formation of factory-

[61] Government of India, Ministry of Law and Justice, The Code on Wages, 2019 (No. 19 of 2019), Section (l) (iii) :3). On matters of self-employment, see the work of the founder of the Self-Employed Women's Association (SEWA) Ela Bhatt: Bhatt, E. R., *We are poor but so many: The story of self-employed women in India.* Oxford, Oxford University Press, 2006.

[62] On women homeworkers and their scope for mobilisation: Hensman, R., Organizing against the odds: women in India's informal sector. *Socialist Register*, *37*, 2001.

[63] Code on Wages 2019, section 1, sub-section 2 (g), (k): 2.

[64] ibid. (r): 3.

[65] Code on Wages, Section 54.

level "Works Committees" and "Grievance Redressal Forums" for conflict resolution.[66] By strengthening bipartite institutions, the Codes seek to exclude the state as much as possible from negotiations, particularly by making it more difficult to approach labour courts.[67] Therefore, it may be stated that the new Codes do not take into account the unequal bargaining relationship between employers and employees and therefore may raise concerns over the mechanisms of negotiations envisioned.

As far as incentive payments are concerned, there has been a significant shift in the functioning of bonus payments in India. A closer look at the emergence of bonus legislation allows to trace back understandings of productivity and the value of someone's work as a share in production. Before the Bonus Act was passed in 1965, employers mostly paid bonuses according to their own ex-gratia discretion at festivals, as well as in relation to workload and profits. However, as the social historian Sarkar has shown, these gestures were part of keeping workers from leaving the factory, especially in times of crises.[68] After half a century of various court rulings around bonus, the Bonus Act inscribed a right to bonus of 8,1/3% (two months) of the basic wage regardless whether profits had occurred during that year or not.[69] In this form, it had generally obtained the function of at least some degree of profit sharing. On the other hand, the 1950s also saw the rise of bonus schemes related to individual workload. Particularly in the textile sector, such quality and quantity bonuses led to an increased overlap between time-rated and piece-rated occupations.[70] Given that not all workers are entitled to bonus payments, this component of the total wage bill has opened new conflicts over wages on the shopfloor.

In the new Wage Code, bonus rules have been extended from applying only to enterprises employing more than 20 workers to all firms. This may reflect the reality of growing bonus incentive payments, especially in the gig economy sector, which makes such an extension necessary. However, bringing bonus disputes to court may be more difficult than in cases of other wage disputes: Whereas disputes on basic wage rates can be brought before a local administrative officer to be tried in magistrate courts, bonus disputes involve

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[66] Government of India, Ministry of Law and Justice, Code on Industrial Relations, 2020, Section 3.

[67] Code on Wages, Section 45.

[68] Sarkar, A., 'The City, Its Streets, And Its Workers: The Plague Crisis in Bombay, 1896-1898', in Ravi Ahuja, ed., *Working Lives and Worker Militancy: The Politics of Labour in Colonial India,* Delhi: Tulika, 2013.

[69] Government of India, Ministry of Labour and Employment, The Payment of Bonus Act, 1965.

[70] One study of the textile sector in Ahmedabad highlights this point in a particularly striking way. See A.K. Rice (1958): *Productivity and Social Organization: The Ahmedabad experiment*, London, Tavistock Publications, 1958.

industrial tribunals at the sectoral level through a two-member body comprising representatives from both unions and employers associations.[71] In essence, while bonus disputes continue to be organised along the lines of collective agreements, basic wage rates envisioned in the Code are mostly negotiated individually. This may undermine the general principle of employee's protection and preference for collective agreements arising out of the recognition of the unequal bargaining relationship between both parties at the labour market.

By rolling back the protection of collective bargaining institutions, the main role of the state is now relegated to fixing minimum wages – But these minimum wages do not always have to correspond to wages actually fixed by parties involved at the firm-level. In other words, there is a tension between minimum wages fixed in the legal-political sphere and the actual scope of negotiation on the ground.[72] Further, note that even the definitions of "minimum" wage standards are not solely based on need-based concerns but also concern production-related standards. Under the Minimum Wages Act, 1948, subsistence rates are calculated for scheduled sectors of the economy based on both piece rates and time rates. These rates are determined by state governments based on a) a given regional price level and b) a certain workload, either per hour or per piece, determined together with firms operating in the sector.[73] This means that minimum wages are only guaranteed for a quantity of work which is equally determined by the Act. As legal scholars Chopra and Apte have described in their analysis, such differences in earnings arising due to piece-rated payment systems were rendered "purely personal" in the Minimum Wages Act. [74] By fixing a given piece rate, the actual wage obtained during a certain period would then only depend on the individual productivity. Consequently, this Act forfeited the right to approach a court on such individual differences in piece rate earnings, even if subsistence standards were not met. In other words, the determination of workloads was not included in

[71] Industrial Relations Code, Section 47.

[72] Grimshaw, D., Bosch, G., & Rubery, J., Minimum wages and collective bargaining: what types of pay bargaining can foster positive pay equity outcomes?. *British Journal of Industrial Relations*, vol. *52* n. 3, 2014, 470-498.

[73] This was reflected in the assignment of the "appropriate government" to fix
"3. 2)a) a minimum rate of wages for time work ('minimum time rate'); 3.2)b) a minimum rate of wages for piece work ('minimum piece rate'); 3.2)c) a minimum rate of remuneration to apply in the case of employees employed on piecework for the purpose of securing such employees a minimum rate of wages on a time work basis 'guaranteed time rate'" (Minimum Wages Act, 1948).

[74] for example, Chopra, D. S., Apte, S. A., *The Minimum Wages Act, 1948. Provisions, State amendments, commentary and rules made by central and state governments*. Eastern Law House, Calcutta, 1973, 86. D. S. Chopra had been one of the authors of the Payment of Wages Act, 1936.

the terms of references of these committees. Thus, this was completely left to the discretion of employers.[75] Despite the merging of the Minimum Wages Act into the Wage Code, this problem still remains. The following section will further elaborate the tensions inherent in different "minimum" concepts which have become part of the Wage Code canon.

3.2.2 Wages and Cost of Living Standards

The minimum wage legislation and its considerations for the calculation of cost-of-living standards lie at the core of the new Code.[76] Therefore, it is necessary not only to look at the emergence of the Minimum Wages Act, 1948 and its positioning in the Wage Code, 2019, but also at the dearness allowance as a separate wage component intended at stabilising wages and protecting them from inflation. The concept of Dearness Allowance was introduced during the World Wars to compensate for soaring food prices, first in-kind then in cash.[77]

The dearness allowance opened up several conflicts. For example, which sections of the workforce would be entitled to such payments – whether only the lower sections or all workers should receive dearness allowance payments to stabilise their wages. While the subsequent Pay Commissions have secured dearness allowances for government and municipal employees, they were not always paid in the private sector and depended on sectoral agreements. According to the last Pay Commission, the percentage of dearness allowance of the total wage stands at 28 per cent in July 2021 from 17 per cent during the year before.[78] The different claims to dearness allowance payments thus increased inequalities between varying sections of the workforce.

Indian debates on the relation between wages and prices during the Second World War still resonate with contemporary deliberations on inflation. The economist Gadgil postulated that particularly dearness allowance payments to the working class would create dangerous inflationary spirals wherein higher

[75] This could be listed as one of the main reasons why the Minimum Wages Act remains criticised until today for its relatively low levels of implementation. See, for example, ILO, *Global Wage Report, 2020-21. Wages and Minimum Wages in the time of COVID-19*, Geneva, 2021.

[76] Economic Times, "Parliament passes Wage Code Bill to ensure Minimum Wages to Workers.", August 2, 2019, https://economictimes.indiatimes.com/news/economy/policy/rajya-sabha-passes-wage-code-bill/articleshow/70501009.cms?from=mdr, (accessed July 4, 2022).

[77] Gadgil, N. V. (Chairman), *Report of the Dearness Allowance Committee*. Government of India Publication, Delhi, 1953.

[78] https://www.ndtv.com/business/7th-pay-commission-hike-in-da-dearness-allowance-and-basic-pay-likely-in-july-3091490, June 24, 2022, (accessed July 4, 2022).

wages would fuel further price spikes.[79] Therefore, he argued that industrial wages needed to be aligned with the national per capita income, wages in other sectors such as cottage industries and agriculture, as well as levels of productivity. However, this contradicted the overall argumentation of employers, particularly in relation to legislative processes: that the working class was too small a category to be accounted for and therefore needed no special attention. This exposes the political character of these debates on inflation– if the working class was really such a small and insignificant proportion of the population, how could it cause and contribute to price volatility all over the country?

With inflation remaining a crucial factor in diminishing earnings, the question of who is entitled to these payments still remains. Many industrial court cases such as the recent Supreme Court Ruling No. 19 of 2019 revolved around these issues, ruling that not all employees have a claim on allowances beyond the basic pay.[80] The Wage Code mainly leaves the question of dearness allowance in the hands of the Central Pay Commission which determines the amount of the allowance for public sector workers and thus provides a (voluntary) orientation for the private sector.

The draft of the Minimum Wages Bill introduced to parliament in 1946 sought to define wage standards for those economic sectors "in which no arrangements exist for the effective regulation of wages by collective agreements or otherwise and wages are exceptionally low." Legal scholars have generally interpreted this Act as an implementation of the international convention within the Indian context given that the Constitution Preamble directly refers to Article 224 of the ILO Minimum Wages Convention.[81] This conceptualisation sought to bring in the government as a regulating body where unions would be too weak or unable to obtain recognition for collective bargaining procedures under the Industrial Disputes Act. This accepted and deliberately created a division between organised and unorganised sectors, carving out a niche for the government to regulate these enterprises. Since the Act aimed at fixing minimum wages on an industry-cum region basis, the Act

[79] The economist D. R. Gadgil is mostly known for his *Gadgil formula* which he developed as vice chairman of the Planning Commission to allocate funds during the fourth and fifth planning period. For his observations and wages and inflation during war time, see Gadgil, D.R. and N.V. Sonavi, *War and Indian Economic Policy*. Gokhale Institute of Politics and Economics, Pune, 1944.

[80] The Regional Provident Fund Commissioner West Bengal vs Vivekananda Vidyamandir on 28 February, 2019. Transfer case no 19 of 2019 arising out of T.P.(C) No. 1273 of 2013, https://indiankanoon.org/doc/126246109/, (accessed July 4, 2022).

[81] Chopra, D. S., Apte, S. A., *The Minimum Wages Act, 1948. Provisions, State amendments, commentary and rules made by central and state governments*, Eastern Law House, Calcutta, 1973.

became covered by the concurrent list of the 7th schedule of the Government of India Act, 1935. Under the Act, the Government drew up a list of scheduled industries under its purview: Schedule 1 includes various small-scale industries, schedule 2 agricultural enterprises.[82]

When the 15th Indian Labour Conference (ILC) was constituted as a tripartite body, the aim was to develop a nation-wide minimum wage standard.[83] As an advisory body, the ILC only had the power to recommend policies to the government without any enforcement mechanisms. In their final report, the main proposals included the quantification of the minimum wage to be provided for a family consisting of one (male) breadwinner, a wife and two children consuming a) 2700 calories of food per day as a worker, plus a total of two additional consumption units for wife and children, b) 72 yards (65.8 metres) of cloth per year and c) housing at the cost of social housing provided by the government plus d) additional 20 per cent of income for fuel, lighting and other miscellaneous items of expenditure (Government of India, 1957). The main controversy arose over the conference resolution regarding food and the calorific formula developed. This attempt to translate calorific values into monetary equivalents was indeed unique to the Indian developmental state. The Conference sought to establish the idea of the male breadwinner based on nutritious standards. These calculations were based on extensive studies on the quantity of food necessary for work tasks, with the idea that household work would require comparatively less nutrition. However, Wallace Akroyd, the nutritionist in charge of calculating these budgets did not conduct studies on the strain of household work, but simply deducted calories from women's and children's energy needs in relation to the main breadwinner's wage. According to the Conference, this formula was to be applied to be translated into wages according to the All-India Consumer Price Index.

Despite the 15th ILC providing a reference for the calculation of minimum wages until today – especially in the context of defining need-based standards -

[82] These industries in schedule 1 include Employment in any woollen carpet making or shawl weaving establishment 2. Employment in any rice mill, flour mill or dal mill 3. Employment in any tobacco (including *bidi* making) manufactory 4. Employment in any plantation, that is to say, any estate which is maintained for the purpose of growing cinchona, rubber, tea or coffee 5. Employment in any oil mill 6. Employment under any local authority 7. Employment on the construction or maintenance of roads or in building operations 8. Employment in stone breaking or stone crushing 9. Employment in any lac manufactory 10. Employment in any mica works 11. Employment in public motor transport 12. Employment in tanneries and leather manufactory. See sections 2(g) and 27 (11) of the Minimum Wages Act, 1948.

[83] The Indian Labour Conference was set up in structure as a "miniature model of the International Labour Conference". See *Economic Weekly*, May 05, 1955. For the summary of the ILC: Indian Labour Conference (ILC). Summary of proceedings of the Indian Labour Conference (15th session, New Delhi, 11th-12th July, 1957), 1958.

its practical implementation has remained limited.[84] The ILC also discussed qualitative standards to determine food baskets – whether differences in consumption e.g. related to meat should be recognised was never decisively regulated.[85] This tension between the minimum wage calculated on the basis of consumption and the wages resulting from a process of negotiation between the state, workers and businesses remains still unresolved.

Even though the Equal Renumeration Act came into force in 1976, there are several structural discriminations in the Minimum Wages Act, 1948 which make it possible until today to pay women lesser wages than men. For example, whereas it is illegal to pay different wages for equal work, it is not illegal to pay different wages for different occupations. Data from the National Sample Survey Office (NSSO) shows that the gender pay gap in India was 28% during 2018-19, with widening tendencies during the pandemic.[86] These minimum wage divisions based on scheduled employments continue to persist in The Wage Code Bill.

At the tripartite forum of the 46th Indian Labour Conference in 2018, the Minimum Wage had been recommended at the level of Rs. 18000 per month, based on the calorific intake formula introduced at the 15th ILC.[87] The Supreme Court confirmed this in the Raptakos Case 2008.[88] The new

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[84] Even right after the passing of the resolution, the Second Pay Commission in 1959 did not follow its recommendations and set the minimum wage at Rs. 80, arguing that in practice, the calorific values determined by the 15th ILC would be too high.

[85] For example, the *Wage Board of the Textile Industry* remarked in 1958 that it was better opt for nutritional choices without meat (p. 21). Similarly, the *National Commission on Labour* in 1969 suggested that rather than increasing the minimum wage, working class households should spend their money on healthier food such as "leafy vegetables" to ensure adequate rates of nutrition. Government of India, *Report of the National Commission on Labour,* 1969, 236.

[86] On developments during the pandemic, see Walter, D. and Ferguson, S, *The gender pay gap, hard truths and actions needed.* UN Women (Asia and the Pacific), September 19, 2022, https://asiapacific.unwomen.org/en/stories/op-ed/2022/09/the-gender-pay-gap-hard-truths-and-actions-needed, (accessed October 10, 2022).

[87] Government of India, Labour Ministry, *Summary Record of Discussions of the 46th Session of the Indian Labour Conference, July 20-21, 2015,* Vigyan Bhawan, New Delhi. https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwjQno6gzd34AhUBuKQKHd92BCsQFnoECA4QAQ&url=https%3A%2F%2Flabour.gov.in%2Fsites%2Fdefault%2Ffiles%2F46-ILC-Record_of_Discussion.pdf&usg=AOvVaw04hVRIHbz9Ybu3rYiWY5YU, (accessed July 4, 2022).

[88] Workmen Employed Under IT Shramik Sena vs M/S Raptakos Brett and Co. Ltd on 25 February, 2008. Appeal (civil) 1585-1587 of 2008, https://indiankanoon.org/doc/613120/, (accessed July 4, 2022).

[88] For example, Mumbai Kamgar Sabha, Bombay vs M/S Abdulbhai Faizullabhai & Ors on 10 March, 1976. 1976 AIR 1455, 1976 SCR (3) 591, https://indiankanoon.org/doc/191016/, (accessed July 4, 2022).

minimum wage committees, however, are now shifting away from these need-based calculations. In an attempt to move beyond the regional differences in minimum wages, the Central Government had fixed the national floor wage at Rs. 178 a day in 2019, to be revised every five years. This is falling way short of earlier calculations and it remains unclear how this figure has been determined. In 2021, the Indian government set up a new committee for the fixing of minimum wages under the chairmanship of Ajit Mishra, director of the Institute of Economic Growth. The Mishra Commission is already the second such forum to determine standards for minimum wages within two years, following the "Expert Committee on Determining the Methodology for Fixing the National Minimum Wage" in 2019.[89] This has reopened a debate on the conceptualization of minimum wages, particularly with regards to the multiplicity of minimum wage standards comprising of nearly 2,000 different occupations for more than 400 different categories and varying skill levels and whether a unified, national floor wage would be more desirable.[90]

4. The Wage Code as a Shift in Economic, Socio-Political and Legal Values

The problem of wage laws in India is not that they are too bureaucratic, or too protective of the formal sector, but that the change of the legal system has become an end in itself to ease the standards of foreign companies to invest in India. According to the largest business association in India, CII, this had been the main aim of these reforms. Workers' concerns are hardly featuring in these deliberations.[91] The parallel structure and fractures between wage earners are maintained in the new law as it limits worker access to wage components such as dearness allowance, bonus and social security entitlements. Since the judicial sphere has such a great impact on wage determination, it is crucial to note that the new law seeks to increase the hurdles to approach the court on wage

[89] Another Committee for Minimum Wages, *Editorial, Economic and Political Weekly*, vol. 56, n. 25, Jun 19, 2021, https://www.epw.in/journal/2021/25/editorials/another-committee-minimum-wages.html, (accessed July 4, 2022).

[90] Shyam Sundar, S. K., India's Expert Committee on Minimum Wages – A Questionable Exercise? *The Wire*, 05.06.2021, https://thewire.in/labour/indias-expert-committee-on-minimum-wages-a-questionable-exercise, (accessed July 4, 2022); Jayaram, N., Protection of Workers' Wages in India: An Analysis of the Labour Code on Wages, 2019. *Economic and Political Weekly*, vol. 54, n. 49, Dec 14 2019, https://www.epw.in/engage/article/protection-workers-wages-india-labour-wage-code, (accessed July 4, 2022).

[91] Confederation of Indian Industry (CII) (2020), Labour Reforms can help reshape India's growth trajectory, CII Blog, October 20, 2020, https://www.ciiblog.in/labour-reforms-can-help-reshape-indias-growth-trajectory/, (accessed July 4, 2022).

matters. The growing number of legal definitions and practices resulting out of case law during the last five decades have led to greater legal mechanisms of exclusion. As the discussion on the intersections of wage problems has shown, two aspects should be considered in particular: the implications of the law on social reproduction, and on the institutional level.

Satpathy, Estupiñan and Malic (2021) have demonstrated that the extension of the minimum wage coverage potentially provides the ground for a universal, nation-wide floor which could guarantee adequate payment for all.[92] However, they also highlight that this would depend on the institutional set-up. This has led other observers to fear a race-to-the bottom in the minimum wage legislation, should different levels within the state be made obsolete in favour of an All-India minimum wage.[93] Therefore, the question opened up by the minimum wage debate touches the deep foundations of labour law and its relation to other fundamental rights, given that minimum wages policies lie at the intersection between social protection including safety nets for subsistence and remuneration matters. One answer to these matters has been provided by the Asian Floor Wage (AFW) concept which seeks to ensure a minimum wage not only in India, but in all countries part of the global textile value chain.[94] Recognising the social functions that wages perform, the AWF is a calorie-based family wage, expressed in Purchasing Power Parity (PPP) in order to make it comparable between countries and thereby transforming it into a transnational tool for collective bargaining.

As far as institutional mechanisms of bargaining are concerned, apart from the minimum wage laws, the Wage Code incentivises shifts towards individual wage bargaining over collective bargaining. Further, not only are inter-firm or sectoral wage levels discouraged, but the Code also marks a further withdrawal of the state from industrial relation matters. This change in the institutional level playing field can be seen in the changed role of the "inspector-cum-facilitator" or simply in the states' absence in clearly defining who is a worker before the law, thereby further contributing to divisions of the labour force. Similarly, this is reflected with regards to access to courts. With the Code encouraging out-of- court settlements, it makes it harder to hold employers accountable. As grass root research from Ajeevika Bureau shows, workers may

[92] Satpathy, A., Estupiñan, X., & Malick, B. K., Wage code and rules–Will they improve the effectiveness of minimum wage policy in India? *Available at SSRN*, 2020.

[93] Shyam Sundar, S. K., India's Expert Committee on Minimum Wages – A Questionable Exercise? *The Wire*, June 5, 2021, https://thewire.in/labour/indias-expert-committee-on-minimum-wages-a-questionable-exercise, (accessed July 4, 2022).

[94] Bhattacharjee, A., & Roy, A. (2016). Bargaining in Garment GVCs: The Asia Floor Wage. In D. Nathan, M. Tewari, & S. Sarkar (Eds.), *Labour in Global Value Chains in Asia* (Development Trajectories in Global Value Chains), Cambridge, Cambridge University Press, 2016, 78-93.

also prefer out-of-court settlements since they can save a significant amount of time and resources.[95] However, the evidence clearly indicates that courts have a tendency to avoid criminal charges for employers in order to protect the smooth and stable functioning of their firms. Given the lower possibilities for fines under the new Code, their financial liability is also likely to decrease. Thus, these shifts may exacerbate the unequal relationship between employer and employees.

5. Conclusion

The effects of the new Wage Code still need to be seen, given that the implementation has been rolled out slowly since July 1, 2022.[96] However, the pandemic has already underlined the importance of taking up new directions to solve the tension between wages (un)-paid and subsistence standards. A vast number of workers, particularly migrant workers, did not have enough money for their everyday needs during the lockdowns.[97] Thus, the pandemic has thrown the spotlight onto the multi-layered effects of the pandemic induced decline of economic production and crises on the shop-floor, the absence of institutional forums for claiming work-based rights and demands, as well as dwindling resources for household consumption. Workers had to rely on state support in the form of food rations and cash transfers,[98] since the flexibility provided by the enabled employers to either terminate or put work contracts on hold, as well as delaying wage payments.

This underlines the importance of a three-level approach to wages which this paper has presented. The erosion of possibilities for trade union involvement at the shop-floor appear at a moment where workers' organisations have demonstrated that they have gained strength in the last years, as the general strike against the new Codes has shown. Nonetheless, these changes at the firm-level have far-reaching implications with wage regimes shifting towards further fragmentations of the total wage bills and systems of incentive

[95] This has been indicated to me during interviews during October 2021. See also Ajeevika Bureau, Across India, workers complain that employers used lockdown to defraud them of wages they are owed, *Online Report 2020*, https://scroll.in/article/959428/across-india-workers-complain-that-employers-used-lockdown-to-defraud-them-of-wages-they-are-owed, (accessed July 4, 2022).

[96] New Labour Codes from July 1? *Newsclick,* June 27, 2022. https://www.newsclick.in/new-labour-codes%20From-july-1-trade-unions-continue-oppose-changes, (accessed July 4, 2022).

[97] Nanda, J., Circular Migration and COVID-19 (August 30, 2020). Available at *SSRN*, 2020.

[98] Khera, R., A review of the coverage of PDS. *Ideas for India*, 2020. https://www.ideasforindia.in/topics/poverty-inequality/a-review-of-the-coverage-of-pds.html, (accessed July 4, 2022).

payments. This calls for a new concept to tackle the relation between reproduction and wages.

Based on the current framing of the Wage Code, the conflicts inherent in wages are likely to increase even further. This could have significant implications not only for individual wages and the amount of money which can be received for a given task, but also for the value of work in society. Laws which undermine the potential for collective bargaining, contribute to a downward shift in the economic value of work, an unequal institutional level-playing field as well as negative impacts on the social value of work.

Employment Flexibility and Industrial Relations Reforms in Greece of Memoranda

Eleni Rompoti, Alexis Ioannides, Theodoros Koutroukis *

Abstract

This article elaborates on the concept of employment flexibility and its types, making a thorough reference to the stormy 'reforms' – the deregulations of the labour market and industrial relations – during the period of the economic crisis and Memoranda from 2010 to 2018 (end of memoranda), both in the public and private sectors in Greece. The most important effects of the economic crisis and of the austerity policies, as well as of the reforms in the labour market and the industrial relations in Greece include wage reductions, the drop of full-time employment and the take-over by part-time employment and the rapid expansion of flexible employment forms and contracts. Furthermore, overall employment has dropped, unemployment has increased, and social benefits as well as individual and collective rights have marked significant shrinkage.

Keywords: Industrial Relations, Public Sector, Private Sector, Economic Crisis, Flexibility.

1. Introduction

Neoliberal reforms of labour markets and industrial relations in the EU is not a new phenomenon; on the contrary it can be traced back to the 1980s. However, labour market reforms and austerity policies imposed during the recent financial crisis under the Economic Adjustment Programmes (memoranda) underpin further reforms as well as flexibility and industrial relations' deregulation in both the public and private sectors in Greece. The aim of the memoranda (signed as follows: 1st 2010-2012, 2nd 2012-2015, 3rd 2015-2018), imposed by the International Monetary Fund (IMF), the European

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Central Bank (ECB) and the European Commission (EU), has been the "internal devaluation"[1]. In Greece, flexibility policies and the deregulation in the labour market and industrial relations are taking place through the dramatic reduction of wages, the alteration of the wage determination system, the reduction of full-time and stable employment and the spread of flexible forms of employment. Also, in times of crisis, individual and collective redundancies are facilitated to the detriment of the employees' protection, the "more favourable regulation" to the benefit of the employee is abolished, the decentralization of sector-level collective agreements prevails and the business-level collective agreements concluded with "associations of persons" under unfavourable working conditions for employees are strengthened (i.e. individualization of industrial relations prevails). In particular, the role of collective bargaining as a foundation of the national labour law and as a way of shaping quality industrial relations is questioned. In addition, the role of the state, as well as the power of trade unions and of the social dialogue are limited and the role of arbitration is set aside or is drastically shrunk[2].

The objectives of this article are: Firstly, to analyse the concept of employment flexibility and its types, given that flexibility is considered in times of crisis as a European policy to promote employment, fight unemployment and increase the competitiveness and productivity of enterprises (the theoretical framework). The second objective is the detailed reference to the reforms of the labour market and industrial relations during the period of the memoranda from 2010-2018, both in the public and private sectors in Greece as well as the effects of these austerity policies during the period of the economic crisis both to the value of labour power and to unemployment in Greece (the empirical framework).

In order to achieve these goals, primary research is carried out regarding the Greek laws and the national labour legislation, as well as with regard to secondary international literature sources and databases (e.g., Eurostat).

[1] S. Mavroudeas, Development and crises: The turbulent path of Greek capitalism in the collective volume *The Map of crisis. The end of delusion*. Athens: Topos, 2010, p. 81-113.

[2] T. Koutroukis, The Greek Labour Market after the 2008 Crisis: Deregulation, reenactment and Decentralization. *Social Policy,* 2017, Vol. 7, 43-52.

J, Kouzis, The Crisis and the Memoranda flatten labour. *Social Policy,* 2016, Vol. 6, 7-20.

E. Rompoti, & A. Feronas, The impact of the economic crisis on the labour market of countries under the economic adjustment regime: A comparative analysis, *Social Policy*, 2016, Vol5, 38-63.

2. Definition and Types of Flexibility

It is commonly accepted on a global level that the definition and concept of labour market "flexibility" is covered by extensive, multidisciplinary literature. These disciplines include several scientific fields, such as Political Economy, Labour Economics, Labour Relations, Industrial Relations, Business Administration and Industrial Sociology. However, regardless of the scientific field studied and the definition set in each one of them, labour market flexibility is a major topic of discussion in modern societies and economies.

As R. Boyer[3] characteristically points out, flexibility can be defined in so many ways that seem as being totally unrelated at first, except from the use of the very word flexibility.

A widely accepted definition of flexibility in the international literature is: The ability of a system, a company, an employee or an entire workforce to adapt to internal or external changes in the labour market, to the technological developments and to globalization. In particular, according to Philpott[4] it is the ability to change employment and wages based on the changing market conditions (labour supply-product demand). In other words, it is the ability of companies to adapt employment and workforce to the changing conditions of demand for products / services but also to the new conditions that prevail in the markets.

Labour market flexibility is considered by European policies to be important for increasing employment and reducing unemployment[5]. In particular, according to the Neoclassicists, flexibility must be applied, because it is seen as the solution to many problems faced by the markets, such as tackling unemployment or reducing labour costs (wage and non-wage), etc.

As far as flexibility in practice is concerned, it encompasses many aspects and has multiple forms and types. It has numerous applications and consequences both on a macroeconomic and microeconomic level, both in the short and long term. Employers can use one or more forms of flexibility, which may sometimes work complementary and other times contradictorily to each other.

Literature on flexibility is very rich (see for example Atkinson[6], Philpott[7], Dedousopoulos[8], Theocharakis[9], Georgakopoulou & Kouzis[10], etc). The following types of flexibility can be found in the literature:

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[3] R. Boyer, *La flexibilite du travail en Europe*. Paris, La Decouverte, 1986.

[4] J. Philpott, *Social Europe*. London: Employment Policy Institute, 1999.

[5] J. Kouzis, Flexibility of employment and quality of work. Karamessini & Kouzis (ed.). *Employment policy. Scope for the coupling of economic and social policy* (p. 173-206). Athens: Gutenberg, 2005.

[6] J. Atkinson, *Flexibility, Uncertainty and Manpower Management*. Brighton: Institute of Manpower Studies, 1984.

First, numerical / quantitative flexibility, which is divided into "external" and "internal". In external numerical flexibility, employers adjust the number of hires or layoffs using as their primary criterion the demand for business products or services or based on the technological changes. Suspension of employees (temporary redundancies) due to the reduced demand for the products of the companies in which they work is also part of the external numerical flexibility. External numerical flexibility includes some of the reforms adopted in the private sector of the Greek labour market. More specifically, with regard to collective dismissals, see section 4.3 (Collective redundancies). In the public sector, some reforms concern the suspension of employees through the method of placement on reserve (1-2 years in suspension, meaning indirect dismissals). For more details, see Section 3 (Flexibility and reforms in labour relations in the Greek public sector).

In internal numerical flexibility, employers regulate the working time of the company's existing workforce depending on product demand, without proceeding to dismissals (e.g., part-time, overwork or overtime, shift-work, work every other day etc). Internal numerical flexibility contains some of the reforms in the Private sector of the Greek labour market, with regard to the extension of flexible forms of employment and the management of working time. See Sections 4.4 (The extension of flexible forms of employment) and 4.5 (The management of working time).

Second, functional or quality flexibility, in which the employees of the company, who are already employed, undertake multiple tasks. Employees are trained through various educational, training and lifelong learning programmes to be more productive aiming to elevate the business profits. Therefore, this investment in "human capital" will yield profits for the company, given that they employ specialized and productive staff. At this point it is worth noting that functional flexibility is classified as "aggressive" flexibility, while numerical / quantitative flexibility is classified as "contingency or defensive" flexibility.

Third, wage flexibility or monetary flexibility. This refers to the flexibility of wages depending on the supply and demand variations. In particular, during the crisis, wages move flexibly downwards due to: reduced demand for a company's products, oversupply of employees, as well as due to the recent reforms and effects of the economic crisis, such as the decentralization of

[7] J. Philpott, *op.cit.*

[8] A. Dedousopoulos, *The crisis in the labour market: Regulation, flexibilities, deregulation*. Typothito. Athens, 2000.

[9] N. Theocharakis,*"Labour Market Flexibility and Unemployment."* Institute of Urban Environment and Human Resources-Panteion University of Athens, 2002.

[10] V. Georgakopoulou, & J, Kouzis, *"Flexibilities and New Labour Relations-Employers' and trade union views-the perspective of social dialogu*e". Athens: INE/GSEE, 1996.

collective bargaining and the increase of individualized employment contracts, the lowering of minimum salaries, the abolition of three-year consecutive employment bonuses and of the extra salaries in the public sector.
Wage flexibility contains some reforms that took place both in the public and private sectors of the Greek labour market with regard to wages and benefits. For more insight, see Section 3 (Flexibility and reforms in the industrial relations of the public sector in Greece). For more details about the private sector, see section 4.1 (Minimum wage and its determination system), and 4.2 (Collective Bargaining).
Fourth, flexibility as to transfers and changes of posts/departments. Employers use to their advantage this type of flexibility and ask employees to move posts/departments and working places in order to meet the employer's needs. Flexibility includes some reforms pertaining to the public sector of the Greek labour market. A characteristic reference is made to the transfers of civil servants. For more details, see section 3 (Flexibility and reforms in the industrial relations in the Greek public sector).
Fifth, geographical flexibility, which means that workers even change geographical places to cover the needs of their employers, as these change from time to time.
Sixth, Employment Protection Legislation flexibility. Specifically, it refers to the freedom of companies-employers for recruitment-dismissals based on the labour legislation, usually measured by the Employment Protection Index, developed by the OECD. This index is based on three tools: a) protection of workers against individual dismissals, b) specific requirements for collective dismissals, and c) legislation on temporary forms of employment. It is worth noting that the flexibility in the Employment Protection Legislation complements the external numerical / quantitative flexibility with quantitative indexes. The Employment Protection Legislation flexibility contains some of the reforms in the Private sector of the Greek labour market, with regard to collective dismissals and the extension of flexible forms of employment. For more details, see Sections 4.3 (The Collective redundancies) and 4.4 (The extension of flexible forms of employment).
Seventh, business or organizational flexibility. The goal is the high-quality management of human resources, which in turn will result in high productivity and profits for the company. Business flexibility is the entrance to the post-Fordism production model and is similar to operational or quality flexibility.
The recent economic crisis that has resulted in rising unemployment, declining full-time employment and increasing flexible forms of employment in the EU and Greece has reinstated the use of the term "flexicurity". The term "flexicurity" first appeared in Denmark in the mid-1990s, which is considered a model country for the rest of the EU member-states. "Flexicurity" is viewed as

an optimal practice that seeks to combine flexibility for employers with protection for employees. In particular, the advocates of "flexicurity" support that flexibility and security are not opposite but complementary concepts. In particular, the term provides flexibility to employers-companies but at the same time protects the existing employees (e.g., quality job, salary, employee mobility, benefits, etc.). Moreover, unemployed people are offered security through unemployment benefits and reintegration into the labour market through Active Employment Policies.

According to Withagen and Tros[11] as well as to Andersen et al[12], the protection of workers is ensured in the following ways: First, job security. In particular, security for the employee to work for the same employer and to remain in the same job post. Second, employment security. In other words, the employee remains in the labour market even if not working for the same employer. Third, income security. This includes generous unemployment benefits paid to the employees in the event of loss of employment, or they receive income in the event there is need to be absent from work for a certain period of time. Fourth, combination security. The employee is given the opportunity to stop working for a period of time in order to attend a training programme with the possibility of returning and re-entering the labour market within a reasonable period of time. Moreover, employees must feel secure in order to balance personal (e.g., family) with their professional life.

3. Flexibility and Reforms in the Industrial Relations in the Greek Public Sector

Flexibility policies and the restructuring of labour relations were initially carried out in the Public Sector, with the aim of converging the public with the private sector.

In general, the policy of limited recruitment prevails. In particular, during the crisis, employment in the public sector is dramatically reduced and the rule of 1:5 and 1:10 between hiring and dismissals applies. Moreover, jobs are radically eliminated or reduced. In particular, from 2012 to 2015 it was decided to reduce the number of civil servants by 150,000. It is worth mentioning the substitution of employees in the public sector with employees through Public Benefit Work Programs[13].

[11] T. Wilthagen and F. Tros, "The concept of flexicurity: A new approach to regulating employment and labour markets". *Transfer,* 2004, vol. 10, n. 2, 166-87.

[12] F. Andersson, et al, "*Temporary help agencies and the advancement prospects of low earners".* National Bureau of Economic Research. Massachusetts Avenue, 2007.

[13] J. Kouzis, *op.cit.*

There have also been changes in the way wages are determined and with the implementation of the Unified Wage Scale salaries have dropped. To be noted that from 2010-2015 salaries dropped by 12% -55%, namely 12-20% in 2010, up to 17% in 2011-2013 and up to 55% in the period 2010-2015[14]. Also, bonuses and special allowances, such as the 13th and 14th salaries for civil servants and pensioners have been abolished. There have also been significant cuts in the pensions and retirement lump-sum payments of civil servants and an increase of the retirement age. In addition, mobility of those employed in the public sector, due to transfers to different departments/posts as well as due to placement in suspension/compulsory leaves, prevails: In particular, this takes place through labour reserve (article 34 of Law 4024/2012, as amended pursuant to article 37 of Law 3896/2011, 1-2 years suspension of the employees, in practice through indirect dismissals), pre-pension suspension, transfers to other departments and suspension of employees[15], etc.

It is worth noting the policy related to the suspension and mobility for certain categories of civil servants, pursuant to Law 4173/2013 (e.g., technical education teachers, school guards, municipal police officers, etc.), who were suspended for nine (9) months during the period 2013-2014 and if they were unsuccessful in finding another department of the public sector to move to, they were dismissed. Their number was not very high; however, it was the first time since the restoration of the democracy that the issue of dismissal of civil servants was raised.

In addition, voluntary unpaid leave for a period up to five years is granted to civil servants with the possibility of employment in the private sector.

Special reference must be made to Law 3845/2010, which provides that the public sector can "hire" employees through Temporary Employment Agencies for a period up to three years. Also, Law 3845/2010 provides for OAED [Hellenic Manpower Organization] to subsidize Temporary Employment

[14] INE/GSEE-ADEDY, (Institute of the Federation of Trade Unions), *The Greek Economy and the Employment:* Annual Reports, Athens, 2012.
ETUI, *The crisis and national labour law reforms: a mapping exercise. Countries Reports*. Brussels: ETUI, 2015.

[15] E. Rompoti and A. Feronas, *op.cit.*
C, Karakioulafi, M, Spyridakis, E, Giannakopoulou, and others, *From new public management to changes in industrial relations in the public sector in Europe and Greece during the crisis*. INE-GSEE, Policy Texts/13, Athens, 2015.
J, Zisimopoulos & G, Economakis, Industrial relations in Greece, the impact of public sector restructuring. *Thesis,* 2013, Vol. 122, 13-53.
INE/GSEE-ADEDY, *The Greek Economy and the Employment:* Annual Reports, Athens, 2012.

Agencies for the recruitment in the public sector of unemployed people aged 55-64 years, so that they can work until reaching the retirement age[16].
Moreover, working hours in the public sector have increased from 37.5 to 40 hours/week (Law 3979/2011)[17] but without a corresponding wage increase[18]. However, under the condition that employees give their consent, it is permitted to convert full-time to part-time employment for five years; and this applies throughout the public sector. This practice results in the decrease of working time and of the income by 50% (Law 3986/2011)[19]. Finally, public corporations are merged and privatized[20].

4. Flexibility and Industrial Relations Reforms in the Private Sector in Greece

Private sector industrial relations reforms under the three memoranda are categorized into the following 5 axes, which relate to: the minimum wage and its determination system, collective bargaining, collective redundancies, increase and extension of flexible forms of employment and working time management policies.

4.1 Minimum Wage and its Determination System

Flexibility policies and minimum wage reforms are based on the following Greek laws: L. 4046/2012[21], L. 4093/2012[22], L. 4127/2013[23], L. 4172/2013[24].

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16 Law 3845/2010 (Government Gazette 65/A) "Measures for the implementation of the mechanism for the support of the Greek economy by EU Member States and the IMF". E. Rompoti, and A. Ioannides, "Temporary agency workers" and economic crisis in the European Union and Greece". *Social Research Inspection*, 2019, Vol. 151, 99-135.

17 L. 3979/2011(Government Gazette A' 138/16-06-2011). On eGovernment and other provisions.

18 J. Kouzis. "Labour in the whirlpool of the economic crisis and memoranda", in S. Zambarloukou, M. Kousis, (ed.), *Social aspects of the crisis in Greece*, Athens: Pedio Publisher, 2014, p. 231-246. J. Zisimopoulos, & G. Economakis, *op.cit.*

19 L. 3986/2011 (Government Gazette 152 /A). "Emergency Measures for the Implementation of the Medium-Term Financial Strategy Framework 2012-2015".

20 J. Kouzis, *op.cit.* T. Koutroukis, Labour Offer, Industrial Relations and Trade Unionism in the Tertiary Sector in the collective volume *The Enlargement of the Services Sector,* Athens: Kritiki, 2011, p. 167-194.

21 Law 4046/2012 (Government Gazette 28/A) "Approval of the Draft Financial Assistance Facility Agreements between the European Financial Stability Facility (E.F.S.F.), the Hellenic Republic and the Bank of Greece, approval of the Draft Memorandum of Understanding between the European Commission, the Hellenic Republic and the Bank of Greece and other urgent provisions for the reduction of the public debt and the rescue of the national economy".

With regard to the minimum wage reforms in Greece, according to Law 4093/2012 "Approval of the Medium-Term Fiscal Framework Strategy 2013-2016, Urgent Implementation Measures of the Law 4046/2012 and the Medium-Term Fiscal Framework Strategy 2013-2016", the national minimum wage is now set by law (since 1.3.2012, L.4093/2012), provided that the National General Collective Agreement or the Tripartite Labour Agreement are abolished as a means for the determination of the minimum wage (which applied up to 29.2.2012, pursuant to Law 1876/1990, replaced by Law 4093/2012).
In particular, from 1.7.2011 to 29.2.2012 the minimum wage in Greece was 751.39€ (gross) per month, determined by the National General Collective Agreement. Since 1.3.2012, as already mentioned, the minimum wage in Greece is set by law. More specifically, from 1.3.2012 to 31.1.2019 for full-time employees over 25 years old it was set at 586.08€ (gross) per month and 3.66€ per hour (22% reduction) and for craftsmen the minimum wage was 26.18€ (gross) per day (22% reduction). Especially for employees up to 25 years old, the sub-minimum wage was 510.95€ (gross) per month and 3.19€ per hour (32% reduction) and for craftsmen the subminimum wage it was 22.83€ (gross) per day (32% reduction).
Also, during the period of the "Medium-Term Fiscal Strategy Framework 2013-2016" there has been suspension or freezing of any increase in the basic salary, including allowances or any increase associated with continuous service employment (e.g., grade, allowance for continuous employment). This measure will continue to apply until unemployment falls below 10%. However, according to the estimations of INE / GSEE-ADEDY[25] this is something not expected to occur before 2036.

4.2 Collective Bargaining

Flexibility policies and reforms for collective bargaining are based on the following Greek laws: L. 3845/2010, L. 3899/2010, L. 4024/2011, L. 4093/2012, L. 4046/2012, L. 4472/2017 and L. 4475/2017.

[22] Law 4093/2012 (Government Gazette 222/A) "Approval of the Medium-Term Fiscal Strategy Framework 2013-2016. Urgent measures for the implementation of Law 4046/2012 and the Medium-Term Fiscal Strategy Framework 2013-2016".
[23] L. 4127/2013 - GG 50/A/28-2-2013. "Approval of the Update of the Medium-Term Fiscal Strategy Framework 2013-2016".
[24] Law 4172/2013 "Income taxation, emergency measures implementing Law 4046/2012, Law 4093/2012 and Law 4127/2013 and other provisions.
[25] INE/GSEE-ADEDY, *The Greek Economy and Employment:* Annual Reports, Athens, 2016.

The Collective Agreement is signed between the employers' organizations and the employees' unions. The initial Greek law, Law 1876/1990[26] on "Free Collective Bargaining" was amended by the laws of the memoranda, i.e. Law 4024/2011, Law 4093/2012 and Law 4046/2012. More specifically, Laws 1876/1990 and 1767/1988[27] were regulating issues that impact directly the industrial relations such as: conclusion, terms of operation and expiry of the individual work contracts that fall under its scope, the exercise of the right to unionism, social insurance, the exercise of the business policy, the interpretation of the regulatory terms of the collective agreement, the rights and obligations of the contracting parties, the meetings of the business employees and finally the terms and the procedures of the collective bargaining, mediation and arbitration (L. 1876/1990, L. 1767/1988).

Regarding the system of collective bargaining during the period of the financial crisis and the memoranda, pursuant to Law 4024/2011[28], stricter criteria are established for the development of collective bargaining and the suspension of the extension of sectoral and co-professional collective labour agreements (SSE in Greek) is promoted.

Law 4046/2012 (Memorandum II) sets the duration of fixed-term collective agreements between one (minimum) and three years (maximum)[29]. However, the application of these restrictions practically abolishes the collective agreements signed for an indefinite period of employment.[30]

Also, the principle of "more favourable regulation" for the employee is weakened or "catalysed"[31] for as long as the Medium-Term Fiscal Strategy Framework lasts and for as long as the business-level collective agreement is in force, in the event of co-existence with a sector-level collective agreement. In more details, the decentralization of sectoral collective agreements is promoted and priority is given to business-level collective agreements with less favourable employment terms. In particular, in 2012, a period when the crisis culminated, 975 business-level collective labour agreements were signed

[26] Law 1876/1990 (Government Gazette 27/A) "Free collective bargaining and other provisions"

[27] Law 1767/1988 (Government Gazette 63/A) entitled "Workers' Councils and other provisions-Ratification of No. 135 International Labour Agreement".

[28] L. 4024/2011 (Government Gazette A 226/27-10-2011). "Retirement arrangements, unified wage Scale, labour reserve and other provisions implementing the medium-term fiscal strategy framework 2012-2015".

[29] L. 4046/2012 (Government Gazette 28/A) *op.cit.*

[30] L. 4046/2012 (Government Gazette 28/A) *op.cit.* Eurofound, *Impact of the Crisis on Industrial Relations and Working Conditions in Europe*, Dublin, 2014. A. Dedousopoulos, *Promoting a balanced and inclusive recovery from crisis in Europe through sound industrial relations and social dialogue: The case of Greece*. ILO, Geneva, 2012.

[31] Law 3845/2010 (Government Gazette 65/A), *op.cit.*

(Organization of Mediation and Arbitration, O.ME.D[32] in Greek-). It is worth noting that most business-level agreements are concluded with "associations of persons" rather than with trade unions[33]. In addition, most of the business-level employment agreements signed with "associations of persons" of employees promote the reduction of wages and of labour rights. However, business-level agreements are not permitted to provide workers with working terms that are less favourable than the working terms provided in the national general collective agreements. The terms of the national general collective agreements, based on Law 1876/1990 concern the minimum non-salary working term and the statutory minimum salary and minimum wage, and they apply to the workers all over Greece.

More thoroughly, "associations of persons" are permitted to conclude business-level collective agreements, where they act as representatives of the employees. A precondition for such an agreement is that these associations of persons represent at least 3/5 of the company's staff and under the condition that there is no business-level union. Also, "special business-level collective agreements" may be signed, concluded with companies with even less than 50 employees, as long as when no business-level union of employees is in place, the respective primary branch or the corresponding branch federation raise no objections[34]. However, in the process, the "special business-level collective agreements" are abolished in favour of a generalized and excessive prevalence of even worse terms of business-level collective agreements to the detriment of sectoral collective agreements[35]. Undoubtedly, the scale is said to be tilting in favour of employers and companies and against employees.

Still, pursuant to Greek Law 4024/2011, the time for post-termination obligations is reduced from 6 to 3 months. The restriction includes terms of the collective agreement which apply to the basic salary/basic wage and four allowances. These allowances concern: children, education, continuous service and dangerous or unhealthy work.

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[32] OMED. Organization for Mediation and Arbitration, (2013). *Annual Report 2012*. Athens: O.ME.D. Available at http://www.omed.gr/sites/all/themes/icompany/pdf./TelikoApologismos2012.pdf .

[33] L. 4024/2011 (Government Gazette A 226/27-10-2011). *op.cit.*

L.4472/2017 (Government Gazette A' 74/19-5-2017). State pension provisions and provisions amendment of the Law 4387/2016, measures for the implementation of budgetary objectives and reforms, social support measures and labour regulations, Medium-Term Financial Strategy Framework 2018-2021 and other provisions. L. 4475/2017 (Government Gazette A' 83/12-6-2017). Ratification of the amended Agreement for the establishment of the General Fisheries Commission for the Mediterranean, State pension arrangements and other provisions.

[34] Law 3899/2010 (Government Gazette 212/A) "Emergency measures for the implementation of the supporting programme for the Greek economy".

[35] L. 4024/2011 (Government Gazette A 226/27-10-2011). *op.cit.*

More specifically, "post-termination effects" of the collective agreements mean the extension of the terms for another three months following the expiry of their term, so as to permit the required time for the completion of the collective bargaining that will end up to the signing of a new collective agreement. Even after the three-month period elapses, in the event that no new collective agreement is signed, the existing working terms continue to apply until the individual relation/work contract is terminated or amended.

The initial Law 1876/1990 provided that post-termination effects were applied globally, meaning that they concerned the entirety of the regulatory terms of the Collective Agreement that expired. Article 2 of the Ministerial Council Act 6/2012, published pursuant to Law 4046/2012 (Memorandum II), not only narrows down the duration of the compulsory extension (from 6 to 3 months), but also converted the post-termination effects from global to partial. This means that only the following regulatory terms continue to apply: First, the minimum salary or wage, and secondly, the benefits related to maturation, children, studies and hazardous work. Consequently, any other salary-related or other term ceases to apply. Thus, it is at the discretion of the employer to unilaterally abolish or not the rest of the terms.

Clearly, the terms that have post-termination effect continue to apply until a new Collective Agreement is signed. In this case, the terms of the new Agreement may be either more or less favourable. In addition, these terms may be then abolished or amended in a subsequent agreement signed between the employer and the employee.

During the period of the financial crisis and the memoranda, the role of the trade unions is limited, since there are no collective agreements; the role of the Mediation and Arbitration Organization (O.ME.D in Greek) is downgraded and the role of employers in resolving collective disputes is strengthened. Arbitration now deals with issues of the basic salary, whereas in the past this institution was responsible for a much wider range of issues. Consequently, a dramatic limitation of the role of arbitration in the collective bargaining system is observed. This means that the institutional mechanism that had been formed exactly for this purpose, is driven either to elimination (in some years) or to minimization of arbitral decisions compared to the past. This results in vast branches and sectors of production remaining unregulated in terms of payment and working conditions. Finally, it is worth noting the dramatic cut in the funding of the Organization for Mediation and Arbitration which limited de facto its ability to intervene in collective bargaining and in issues pertaining to employment in general.

4.3 Collective Redundancies

Flexibility policies and reforms for collective redundancies are based on the following Greek laws: L. 3963/2010[36], L. 3863/2010[37], L. 3845/2010[38] and L. 3847/2010[39].

In particular, the institutional framework for protection against dismissals has been lightened. Also, the notice period for dismissal of employees who are under an indefinite contract is reduced, from twenty-four (24) to four (4) months. That is, the notice period is shortened to 1/6. There is also a reduction in the amount of compensation paid due to dismissal, up to 50%, which now corresponds to twelve (12) salaries compared to twenty-four (24) salaries in the past. In addition, the immediate payment of the full amount of the compensation is abolished and a minimum advance payment equal to 2 instead of 6 months is established. In particular, the number of instalments increases and the amount of the instalment paid decreases.

Pursuant to Law 3863/2010 (Article 74), which amended the initial Law 1387/1983, the limit of collective redundancies rises from 4 to 6 collective redundancies per month, for companies employing from 20 to 150 people (compared to the initial 20-200 people). Also, 5% of employees in larger companies can be dismissed, namely companies with more than 150 employees (compared to the previous 2% or 3% of dismissals in companies employing more than 200 people). This measure favours collective redundancies, thus leading unemployment upwards.

4.4 The Extension of Flexible Forms of Employment

Flexibility is characterized by flexible forms of employment, which appear in deregulated and flexible markets. The categorization of new flexible forms of employment includes fixed-term, part-time contracts, shift-work, "genuine lending" or "borrowing of employees", "non-genuine" or "professional lending of employees" through TAW (temporary agency work), contract work, provision of work off the employer's premises, by piecework, teleworking, provision of services in the form of outsourcing etc.

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[36] Law 3963/2010), adopted in order to harmonise the Greek legislation with Directive 75/129/EEC on the approximation of the laws of the Member States relating to collective redundancies.

[37] Law 3863/2010 (Government Gazette 115/A). "New Insurance System and related provisions, arrangements in industrial relations".

[38] Law 3845/2010 *op.cit.*

[39] L. 3847/2010 (Government Gazette 67/A/11-5-2010). 'Redefining Christmas and Easter holiday allowances and the leave allowance for pensioners and public servants'.

Reforms for flexible forms of employment are based on the following Greek laws: L. 3899/2010, L. 3863/2010 and L. 3986/2011.

More specifically, the maximum duration of temporary employment and successive fixed-term contracts is extended from twenty-four (24) to thirty-six (36) months (from 2 to 3 years[40]), as is the case of "temporary agency workers" through TWAs with the maximum duration being tripled, from 12 months to 36 months (from 1 to 3 years[41]). Also, the number of successive fixed-term contracts is no longer limited, as long as the reasons for concluding them are considered to be objective. In our opinion, the increase of flexible employment forms results in the reduction of indefinite term work contracts.

Furthermore, in times of crisis, "rotating employment" (i.e. the employment of a salaried person for fewer days per week or fewer weeks per month or fewer months per year, or a combination of the above, however for the entire daily shift, increases from 6 (L.1892/1990) to 9 months a year (L.3846/2010[42], L.3899/2010).

In addition, employers have the right to suspend their staff for up to 3 months a year, as well as to convert the employee's contract from full-time to part-time, upon the employee's consent. In Greece, from 2010-2012, the conversion of full-time to part-time contracts sky-rocketed to 370% and to shift-work to 14,000%. The size of the informal labour market, which is already large, seems to be out of control during the crisis period[43].

It is worth noting the abolition of the 7.5% increase of the hourly wage for part-time workers employed for less than 4 hours of work per day (less than 20 hours per week, L. 3899/2010) as well as the abolition of the 10% of the hourly wage for those working over 4 hours per day. Thus, part-time employment during the crisis increases due to the fact that it is a cheap form of employment for employers.

Also, according to Law 3863/2010 (article 74)[44] entitled "New Insurance System and related provisions regulations in industrial relations" regarding individual agreements and specifically apprenticeship agreements for young people aged 15-18, the following apply: The duration of these agreements extends up to one year (12 months) and the amount of salary corresponds to 70% of the minimum wage. Young apprentices in this category are not protected under the labour legislation, but are covered for health and safety. It

[40] L. 3986/2011 (Government Gazette 152/A). "Emergency Measures for the Implementation of the Medium-Term Financial Strategy Framework 2012-2015".

[41] Law 3899/2010 (Government Gazette 212/A) *op.cit.*

[42] Law 3846/2010 (Government Gazette 66/A). "Guarantees for job security and other provisions".

[43] INE/GSEE-ADEDY, *op.cit.*

[44] Law 3863/2010 (Government Gazette 115/A). *op.cit.*

is not permitted to engage employees aged 16-18 for more than 8 hours a day and 40 hours a week. Also, 15-year-old apprentices can work for maximum 6 hours per day and 30 hours a week. Apprentices cannot work night shifts (10pm-6am). Young people aged 18-25 who enter into an employment contract receive 80% of the minimum wage.
Another issue worth noting is the special agreement for gaining professional experience. Law 3986/2011 (article 43) provides for the conclusion of an employment agreement for the acquisition of professional experience. This type of agreement concerns employees who have completed their 18th year of age and are up to 25 years old. The contract for the acquisition of professional experience is for a fixed term which can extend up to 24 months. Regarding remuneration, the employees under such a contract are paid lower salaries compared to the employees hired for the first time, without previous service and who are subject to the Collective Agreements related to their specialty. The reduction of remuneration amounts to 32% according to the Act of the Ministerial Council in 2012.
Finally, the probationary period is extended from two (2) to twelve (12) months, without notice of dismissal or entitlement to compensation in case of dismissal.

4.5 The Management of Working Time

Flexibility policies and working time management reforms are based on the following Greek laws: L. 3986/2011, L. 3863/2010, L. 3385/2005, L. 2874/2000 and L. 1892/1990.
According to L. 3863/2010 (article 74, par. 10), "New Insurance System and related provisions, regulations in industrial relations", as amended by L. 3385/2005[45], a new system concerning working time is established, with special reference to overwork (Law 3385/2005, article 1 paragraph 1) and overtime (Law 3385/2005, article 1 par.2).
Specifically, the increases in hourly rates paid for overwork or overtime are reduced by 20% (L.3863/2010). Overwork is defined as the employment of an employee for one additional hour on a daily basis to cover the needs of the company (i.e. 9 working hours per day). In particular, when companies apply conventional working hours, up to 40 hours / week and five-day employment, they can engage the employee for 5 additional hours on a weekly basis (i.e. from the 41st up to the 45th hour as overwork). For those employed up to 40 hours per week and in six-day employment overwork amounts to 8 additional

[45] Law 3385/2005 (Government Gazette 210/A) "Regulations to promote employment, strengthen social cohesion and other provisions".

total hours per week (i.e., from the 41st up to the 48th time as overwork). Overtime is defined as the employment of an employee for more than 45 hours per week working in companies that follow the conventional hours of up to 40 hours / week and five-day work. Also, it means the work of the employee for more than 48 hours per week, in companies that apply the six-day employment. Overtime hours are remunerated with the corresponding hourly wage increased by 20% (meaning reduced by 25% provided in Law 3385/2005), regardless of the number of overwork hours and overtime during the year. Overwork is not taken into account when calculating overtime. Employees who work up to 120 legal overtime hours per year are remunerated with the hourly wage increased by 40% (compared to 50% pursuant to Law 3385/2005). Employees who exceed 120 legal overtime per year receive for each overtime the hourly wage increased by 60% (compared to 75% pursuant to Law 3385/2005). It is worth noting that, in the event that the overtime employment of the employee proves to be illegal[46] or an overtime not meeting the legal requirements (L. 3385/2005, Article 1 par. 4), then for each hour of such overtime the employee is entitled to the hourly wage increased by 80% (L. 3863/2010, article 74 par.5, compared to 100% pursuant to Law 3385/2005).
Also, during the period of the memoranda, it is observed that permissions for overtime are not obtained and in fact it is noted that the role of S.EP.E. (Hellenic Labour Inspectorate) is completely downgraded.
Furthermore, in the arrangement of working time according to the most recent Law 3986/2011 (article 42, amending Law 1892/1990[47], article 41) the increased working hours of one period (period of increased employment) are offset with the fewer working hours of another period (period of reduced employment and more days off). In particular, in a period of increased employment the employee may work 2 extra hours in addition to 8 hours / day. That is, if their conventional working hours are up to 40 hours / week (or less than conventional hours), they may work up to total 10 hours / day, provided that these additional hours are deducted from the period of decreased employment. The duration of the two periods of increased and decreased employment may not exceed a total of six (6) months in a period of twelve (12) months. Undoubtedly, arranging working time can be a practice of working time flexibility, however an average of 40 working hours per week or any fewer hours is ensured, if the company applies less conventional working hours. Therefore, the salary of the employees is not affected, as long as the average

[46] Law 2874/2000 (Government Gazette 286/A) "Promoting employment and other provisions".
[47] Law 1892/1990 (Government Gazette 101/A) "For modernization and development and other provisions".

weekly employment is preserved. This practice of arrangement of working time is not very widespread in Greece, compared to the rest of Europe. This practice applies to all employees either in a certain branch or part of the enterprise, or in a category or specialty of employees. It is a policy that mainly favours employers in times of increased production and demand for products. Therefore, employers use this practice to ensure competitiveness and sustainability of the company by reducing labour costs in periods of reduced productivity and low demand for products. Thus, flexible adjustments of the total working time are applied with fluctuations of the hours depending on the needs of the company.

Another practice is the abolition of five-day employment in stores and the adoption of six-day employment with 40 working hours per week. Attempts are made to apply this practice in all sectors. Moreover, it seems that the measure for stores to be open on Sundays tends to be adopted. Also, daily rest is reduced to 11 consecutive hours instead of 12 for every 24 hours.

The reforms mentioned above, both in the public and the private sector, were abruptly and violently introduced in Greece and set the tone for the Greek experiment. The adoption of overwhelming reforms in the period 2010-2018 was not simply an initiative of the governments, but often a blind and indiscriminate adoption of the recommendations issued by international bodies. Consequently, the legislative "initiatives" were echoing more or less the opinions and positions of the institutions (ECB, EU, IMF), which "supported" and supervised Greece during the period of the three memoranda.

The unprecedented violence of the most extreme neoliberal measures that were recorded historically in the Greek labour market in such a short period of time, resulted in abrupt working degradation and to dramatic impacts on human and working rights, which had been established in the European Social Charter. Undoubtedly, the recommendations of the Troika violated the European Social Charter and the European social status quo. The European Social Charter has been ratified by tens of member-states of the Council of Europe, among which is Greece, who signed it in 1984. These countries are bound by supra-legislative validity.

The General Confederation of Greek Workers (GSEE), addressed during the period of the financial crisis to the Council of Europe and the ILO several times regarding violation of labour rights and social status quo, reduction of salaries in the public and private sector, abolition of the collective bargaining and the domination of the individualized work contracts, the increase in dismissals and the expansion of flexible forms of employment, the impoverishment of the employees and the total deregulation of the industrial relations that the memoranda anti-labour measures brought in Greece.

The victory of the GSEE and the vindication of the workers' fights came through the European Committee of Social Rights, of the Council of Europe on 23.3.2017, when it was unanimously ruled that the measures of the memoranda violated articles of the European Social Charter-ESC (see for example Article 1§2, Article 2§1, Article 4§1, Article 4§4, Article 7§5, Article 7§7 of the ESC).
It is worth noting that in 2011 Mr. Juan Somavia, Director-General of the International Labour Organization stated that:

> Respect for fundamental principles and rights at work is non-negotiable, not even in times of crisis when questions of fairness abound. This is particularly important in countries having to adopt austerity measures. We cannot use the crisis as an excuse to disregard internationally agreed labour standards (ILOs' Director-General address to the European Parliament, 2011).

Consequently, the European Committee of Social Rights of the Council of Europe along with the ILO dynamically criticized the memoranda measures in Greece that have had a negative impact on labour, on the dignity of workers and on the economy in its entirety. The fundamental social and labour rights must be always respected and not to be sacrificed on the altar of austerity policies.

5. The Impacts of the Economic Crisis on the Labour Market and Industrial Relations in Greece of Memoranda

The acute economic crisis has had a number of social and economic consequences and has caused rapid reforms at the core of labour law. The most important effects on the labour market and industrial relations are as follows: There is a total degradation in industrial relations in both the public and private sectors during the period of the crisis. In particular, as already mentioned, the public sector abolishes its role as active employer and employment conditions and industrial relations are converging with the working conditions of the private sector. Significant reductions in salaries and allowances in both the public and private sectors are noted. In addition, an overall decentralisation of collective agreements, collective bargaining and their negotiation at company level is observed in Greece. Also worth noting is the abolition of the "principle of more favourable regulation" for workers, and the limitation of their industrial and social rights. In particular, the individualization of industrial relations, low trade union participation, the degradation of the role of arbitration and limited social dialogue are dominant features.
During the period of economic adjustment, there was a decrease in employment and an increase in unemployment. Specifically in Greece,

according to Eurostat, in 2014 employment rate was 53.3% (63.8% in 2010). In particular, the national target in the national reform programs in the context of "Europe 2020" for 70% of employment was not achieved. On the contrary, employment from 2010-2014 decreased by 10.5%. In the EU-28 member-states, the employment rates were 68.8% in 2014 (68.5% in 2010). Regarding unemployment, it was 27.5% in 2013 in Greece, whereas in the EU-28 members it was as low as 10.8%. Unemployment rates for young people under the age of 25 were 58.3% in 2013 in Greece and 23.6% in the EU-28 members. Similarly, rates in Greece for young people (15-24 years old) N.E.E.TS (Not in Employment, Education or Training) in 2013 are high, 20.6%, while in the EU-28 members is amounts to 13.0%. Also, long-term unemployment for the year 2014 was 19.9% (5.7% in 2010), compared to 5.1% (3.9% in 2010) in the EU-28 members in 2014. In particular, the long-term unemployed young people aged 15-24 in 2014 increased to 61.9% (36.7% in 2010), while in the EU-28 members it was only 34.8% (30.0% in 2010, Eurostat, 2010-2014).

The acute economic crisis as well as labour market reforms in Greece have increased unemployment, labour insecurity, instability and "in-work poverty". Regarding unemployment benefits, both the amounts paid and their duration have dropped (360€, 5-12 months). The number of beneficiaries has also reduced. Since 2014, the total days of the unemployment subsidy should not exceed 400 days in a period of four years, before the starting payment date of the allowance. Also, from 2012-2016 there has been a significant reduction in salaries, ranging from 15%-60%. Other aspects that marked increases include: uninsured work from 22%-40%, homeless population by 27%, while there have been 4,000 suicides. It is also worth noting the dramatic increase in Greeks with higher education qualifications that have decided to immigrate. This leads to the country losing specialized human capital, as Greece becomes a host country for unskilled immigrants[48].

The downgrading of full-time employment and the increase of flexible forms of work such as temporary, part-time and "rotating employment" result in reduced wages and limited rights for workers. Specifically, in 2013, 28,410 contracts were converted from full-time to part-time and 29,644 from full-time to "rotating employment"[49]. Individual and collective redundancies were also facilitated by reducing the notice period as well as the amount of employee dismissal compensation. Specifically, from 2007-2018, temporary employment has marked various fluctuations. On the contrary, part-time employment in

[48] J. Kouzis, *op. cit.* INE/GSEE-ADEDY, *op. cit.*

[49] S.EP.E (Labour Inspection Body) (2014). Report of Acts for the year 2013. Athens. Ministry of Labour, Social Security and Welfare. Available at: http://www.ypakp.gr/uploads/docs/7702.pdf.

Greece from 2007 to 2018 followed a constant upward trend. Specifically, temporary employment for 2018 was 7.6%, while in the EU-28 it is 12.1%. Part-time employment in Greece was 9.1% in 2018. There has been an increase by 3.7% from 2007-2018. In the EU-28 for 2018, part-time employment amounted at 19.1%. Despite the fact that the rates of flexible of employment are low in Greece compared to the average rates in the EU, these forms started expanding and tend to become standard practice for Greek employers as well.
Also, the impact of the crisis and the memoranda led to increased relative poverty rates of people. Specifically, in Greece in 2018 the relative poverty is 31.8%, while in the EU-28 it is 21.9%. As far as the material and social deprivation are concerned, Greece in 2018 was at 33.6% while the EU-28 at 13.1%[50].
The vision of "Europe 2020" for inclusive growth aimed at reducing poor population by 20 million has already been forgotten. Dafermos and Papatheodorou[51], Ioannides, Papatheodorou and Souftas[52], Rompoti and Feronas[53], Guillen, Gutierrez and Pena-Casas[54] rightly argue that a high rate of poor people comes from insecure European workers, as approximately half of them live below the poverty line.

6. Conclusions

The objectives of this article were on the one hand to define the concept and types of flexibility, and on the other hand to make a detailed reference to the reforms and the impact of austerity policies on the labour market and the industrial relations during the period of the memoranda from 2010-2018, both in the public and private sector in Greece.
According to our most important conclusions, flexibility is used as a business strategy with the main objective being the reduction of labour costs as well as the general flexibility in the labour market and in industrial relations. Undoubtedly, austerity policies during the recent economic crisis, under the regime of Fiscal Adjustment Programs (memoranda) are strengthening the

[50] Eurostat (2020). Online database. www.ec.europa.eu/eurostat.
[51] Y. Dafermos and C, Papatheodorou, Working poor, labour market and social protection in the EU: A comparative perspective, *International Journal of Management Concepts and Philosophy,* 2012, Vol. 6, n. 1/2, 71-88.
[52] A. Ioannides, C. Papatheodorou and D. Souftas, *Workers and yet poor,* Athens: INE/GSEE, 2012.
[53] E. Rompoti, & A. Feronas, *op.cit.*
[54] A. Guillen, R, Gutierrez and R. Pena-Casas, *Earnings inequality and in –work– poverty.* Working papers on the Reconciliation of work and welfare in Europe. Edinburgh, 2009.

reforms of recent years in both the public and private sectors in Greece. In particular, deregulation in the labour market and labour relations is taking place through the restructuring-weakening of the wage-setting system, the rapid reduction of wages, the reduction of full-time employment substituted by part-time employment and the rapid expansion of flexible forms and employment contracts. There is also deregulation of the employment protection legislation by facilitating individual and collective redundancies at the expense of employees. Moreover, the dismissal notice period has been shortened and compensation amounts have dropped. Furthermore, the abolition of the "more favourable regulation" for the employee, the decentralization of sectoral collective agreements, the strengthening of business-level collective agreements by "associations of persons" and finally the full customization of employment relations have negatively affected all working conditions. In addition, the role of collective bargaining is being challenged and the role of the state and the power of trade unions are being curtailed.

The above-mentioned catastrophic reforms and austerity policies mentioned in detail in this article have social and economic consequences, such as the reduction of full-time and stable employment, the increase of flexible forms of employment, the increase of unemployment, the reduction of social benefits, the reduction of individual and collective rights of workers, the rise of insecurity, the increase of in-work poverty, the full personalization of labour relations and the increase of multi-speed workers contributing to the fragmentation of the labour market. Also, the invocation of flexicurity leans in favour of the flexibility of companies and against the protection of the employees, since the insecurity of employees and the complete deregulation of industrial relations are dominant.

The flexibilization of labour relations in conditions of economic crisis has been used and is still used in Greece to achieve the reduction of the value of labour power, in a developed economy with relatively strong institutional protection of workers. The combination of elasticity and economic crisis has been proved particularly effective for capital and is therefore expected to be used again at European level.

According to the authors of this article, it is of the outmost importance to reinstate Law 1876/1990 and its terms of operation, which was essentially abolished by the memoranda. More specifically, it is an imperative need to further improve Law 1876/1990 in order to upgrade the collective bargaining as well as the way to solve disputes through the Organization of Mediation and Arbitration (O.ME.D in Greek).

However, reinstating the system of collective bargaining to the provisions of 1876/1990 is not sufficient. The era of the Memoranda undermined the pre-memoranda role of the social partners, causing decollectivization, accompanied

by a turn of the employers towards solely employers' bargaining or even the total absence of bargaining. This totally shocked the foundations of the role of unions, leading to the reduction of the union density and the coverage of the workers through collective agreements. Without actions to support the power of workers' organizations, no legislative change will be adequate in order to relive the "status quo ante" in industrial relations. It is undoubtedly necessary to introduce structural and social reforms in favour of the workers and to promote a fairer balance of power in the labour market between employers and trade unions.

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Comparing the Content of Collective Agreements across the European Union: Is Europe-wide Data Collection Feasible?

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Abstract

Collective bargaining is central to wage-setting and working conditions, but knowledge about what exactly has been concluded in collective bargaining agreements (CBAs) in Europe is limited. In light of the debate about a European Minimum Wage this information gap is evident. This article aims to explore the feasibility of an EU-wide CBA data collection. We conclude that such a database could cover all CBAs for nine countries, all multi-employer CBAs for another nine countries and a selection of CBAs for two countries. Data collection for the remaining countries has to rely on CBAs collected from social partners. Realisation of an EU-wide CBA Database seems a doable but challenging task. When CBA texts would be collected and coded, the content of CBAs could be compared across member states. The Wage Indicator CBA Database is an example of a cross-country coding scheme for CBA texts. Text-mining options are explored as a promising way forward as to reduce coding efforts.

Keywords: Collective Agreements; Registry of Agreements; European Union; Coding of Agreements; Text Mining

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1. Introduction

In their renowned study, "What do unions do?" Freeman and Medoff (1984) argued that trade unisons bargain for higher wages, equal pay, and fair working conditions, implying that collective bargaining is central to wage-setting processes and that wage outcomes vary according to the wage levels agreed upon in collective bargaining. Almost forty years later, little is known about the wages set in collective bargaining agreements (CBAs) in the European Union (EU). The CAWIE report (Van Gyes and Schulten, 2015) showed that some knowledge of collectively agreed wages is available from National Statistical Offices or Central Banks in ten EU countries. Even less is known about working conditions agreed upon in CBAs across the EU, whereas, according to the European Commission's re-launched dialogue with social partners at the European level (European Commission, 2016), both wages and working conditions data is critical for monitoring progress in their fixing. This knowledge gap remained evident in the Commission's most recent ESDE reporting (European Commission, 2020), in OECD's 'Negotiating Our Way Up' report (2019), and in Eurofound's flagship report, 'Industrial Relations: Developments 2015–2019' (Eurofound, 2020). These reports reveal that knowledge about the impact of collective bargaining is based on data from labour force or enterprise surveys, on inventories of national bargaining systems or on reviews of legal regulations, but not on the coded texts of CBAs concluded throughout Europe.

This absence of data on what exactly has been concluded in collective bargaining is most likely related to the fact that at the European level no person or institution is systematically collecting full texts of CBAs and coding their content. Currently, this is particularly relevant in light of the debate about a European Minimum Wage, whereby some of the parties involved have argued that unions and employers set wage floors in collective agreements and that it is not up to political decision-making to set minimum wage standards. This calls for more information about the wages agreed upon in CBAs. A similar argument holds for other widely debated labour market issues such as working-time regulation. This article aims to explore the feasibility of building a database of CBAs in Europe to tackle such blind spots, taking as its starting point that both Internet use and advances in natural language processing may accelerate data collection and coding (Askitas and Zimmermann, 2015).

The outline of this article is as follows. Section 2 reviews the body of knowledge regarding the impact of CBA coverage and CBA clauses on wages and working conditions. Section 3 explores the presence of CBAs in Europe. Section 4 maps the building blocks of an EU-wide CBA registry, including the requirements for gathering, coding and annotating CBAs, taking the

WageIndicator CBA Database and the options for text mining of CBA texts as examples. Section 5 draws conclusions on the feasibility of establishing a continuous, Europe-wide data collection of coded CBAs.
This article is based on desk research and on three studies dealing with the coded content of CBAs. The first study relates to the coded database of collective agreements in the Netherlands, maintained by the FNV trade union confederation and the AWVN employers' association (Schreuder and Tijdens, 2004; Tijdens and Van Klaveren, 2003; Yerkes and Tijdens, 2010). The second study concerns the coding of collective agreements in 23 EU countries by means of survey questions in an EC-funded Social Dialogue project (WIBAR-3 VS/2014/0533, Van Klaveren and Gregory, 2019). The third project concerns the gathering and coding of CBAs for the WageIndicator CBA Database in EU and associate member states, in two consecutive EC-funded Social Dialogue projects (BARCOM VS/2016/0106, COLBAR-EUROPE VS/2019/0077) and in a third project that started in 2021 (BARCOVID VS/2021/0190).

2. The Literature about Comparisons of Collective Agreements

2.1 Introduction

When reviewing the literature about collective bargaining, four dimensions can be distinguished. The first dimension refers to bargaining systems, the hierarchy in these systems, and collective bargaining coverage. Most studies addressing collective bargaining have discussed country-level trends in bargaining coverage, extension regimes, wage coordination, vertical structure of collective bargaining, and issues related to single- versus multi-employer bargaining, often using the OECD/AIAS database on Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts (ICTWSS) (see OECD and AIAS, 2021). The second dimension refers to the actors involved in collective bargaining processes, including employers, employers' organisations, and trade unions and other employee representatives. In their overview of collective bargaining in Europe in the 21st century, Eurofound (2015) extensively covered the actors involved in bargaining. The third dimension covers the power relations between actors and the incidence of industrial action, as captured in Eurofound (2019) and in the ETUI/AIAS Collective Bargaining Newsletters. The fourth dimension covers the outcomes of bargaining processes, in other words, the content of collective bargaining agreements (CBAs). These outcomes refer to topics such as wage levels or wage increases; working hours, working schedules and holidays; sickness and disability arrangements; social security; training; work-family arrangements; job security; internal mobility, and work organisation, or workforce numbers.

Across Europe, the body of knowledge on bargaining systems, processes and actors is far more extensive than that on bargaining outcomes. This article aims to contribute to the body of knowledge regarding bargaining outcomes, in the next two sections focusing on wages and working conditions, followed by an inventory of the knowledge about the topics on the bargaining agendas in Europe and concluded with a review of the use of leximetric coding of legal texts to facilitate the coding of large volumes of collective agreements texts.

2.2 The Impact of Collective Bargaining on Wages

Industrial relations theory predicts three main effects of collective bargaining on wages (e.g. Kaufman, 2010; Garnero et al., 2020, Zwysen and Drahokoupil, 2022; ILO, 2022). First, wages are expected to be higher for those covered compared to those not covered, which is referred to as the wage premium of collective bargaining. Second, collective bargaining is expected to raise wages and benefits of low-wage workers to a larger degree than those of middle- and higher-wage workers, thereby reducing wage inequality, as wage dispersion will be smaller in covered enterprises compared to not-covered enterprises. Third, those covered by a collective agreement are more likely to benefit from employer-provided health insurance, pensions, and paid holidays. The first expectation has widely been studied empirically, whereas the second and third have been explored to a lesser extent. The empirical studies at stake predominantly draw on survey data, using a binary variable indicating whether a worker is covered or not, or a categorical variable with three values, whereby coverage is divided into coverage by a single-employer agreement or a multi-employer agreement. The most relevant studies for Europe will be discussed below.

The binary variable approach is among others used to explore whether wage premiums exist related to collective bargaining coverage. Indeed, in the Czech Republic, Hungary and Poland industry agreements increase wages for low-skilled workers and company agreements do so for medium- and high-skilled workers, according to analyses on a large matched employer-employee dataset (Magda et al., 2012). Blien et al. (2011) found the same result over time for Western Germany, whereas Heinbach and Schröpfer (2007) concluded that for Germany as a whole CBA opening clauses on employment levels in collective negotiations affected wage bargaining as well as bargaining on non-wage issues. Based on micro-level data from the Structure of Earnings Survey and other sources in OECD countries, workers covered by firm-level bargaining had higher wages, while no such effect was found for workers covered by sectoral bargaining (OECD, 2018). Firm-level CBAs benefitted both employers and employees by creating higher productivity and wages, without being

detrimental to firm performance, according to a study of linked employer-employee panel data in Belgium (Garnero et al., 2020).

Cross-sectional survey data does not allow to control for companies' self-selection into sectoral and firm-level collective bargaining. Thus, the question remains whether companies with either predominantly low-skilled or predominantly high-skilled workforces would engage in firm-level collective bargaining, thereby affecting the wage outcomes of collective bargaining coverage. This problem has been addressed by Addison et al. (2014), using establishment-level wage data from Germany. These authors explored the CBA wage premium and found that average wages increased by 3 to 3.5 per cent for those entering into collective bargaining if they had no CBA before, and decreased by 3 to 4 per cent after abandoning collective bargaining.

The studies using survey data assume an effect of an average CBA with clauses regarding wage levels, but this approach does not capture the variation in wage clauses in CBAs; it has neither been empirically tested. According to the WageIndicator CBA Database, CBAs vary to the extent in which they regulate wages. Some CBAs detail pay scales, others only include pay increases; some refer to Statutory Minimum Wages while others include clauses indicating that wages are agreed for individual employees. Using data from 602 single-employer and multi-employer CBAs from 21 European countries included in the WageIndicator CBA Database, Besamusca (2021) revealed that 42 per cent had one pay scale table and 24 per cent multiple tables, while 3 per cent contained only indices and no payable amounts; the remaining 31 per cent did not include any pay scales. The variety found in wage-setting clauses in CBAs challenges the binary coverage versus non-coverage approach in analysis of survey data. In surveys this could be solved by adding a question regarding the name of the CBA to covered respondents. Using an open text box for storing the answers may result in unidentifiable responses, though this might be solved by using a tick box with a list of CBAs. Merging survey data with data from other sources, such as data from administrative records, may also provide a solution. In conclusion, two conditions need to be fulfilled to explore the impact of collective bargaining, namely, first, acquiring insight in the clauses agreed in CBAs and, second, the creation of a system whereby individual workers with their wage and working conditions characteristics can be connected to the CBA they are covered by.

2.3 The Impact of Collective Bargaining on Working Conditions

Compared to the large number of studies focusing on the impact of bargaining coverage on wages, the number of studies focusing on the impact on working conditions is relatively small. In contrast to the studies on wages, here we find

studies that explore the impact of specific clauses in collective agreements, thereby capturing the variation within CBAs. These outcomes prompt major questions in industrial relations theory. For example, does a CBA clause on training result in a larger share of the covered workforce following training courses or is a clause on training particularly negotiated in CBAs covering enterprises where the workforce hardly follows any training? This section reviews studies that explored the impact of bargaining coverage on working conditions.

Survey data has also been used to explore the impact of bargaining coverage on working conditions. Country-level collective bargaining coverage was the strongest factor shaping the social consequences of non-standard schedules, shown based on the European Social Survey (ESS) (Taiji and Mills, 2020). When covered by a collective agreement, employees in crisis-hit organisations reported wage adjustments less often and workforce adjustments more often compared to those not covered, according to a web-survey about the impact of the economic crisis during the early 2010s on companies' wage or workforce adjustments in Germany and the Netherlands (Tijdens et al., 2014). Other studies relied solely on coded CBA information or merged coded CBA information with other sources. Clauses on flexible working practices demonstrated greater formalization in some agreements, while shifting towards more general managerial prerogative clauses in others, according to the content of approximately 100 CBAs in the United Kingdom (Dunn and Wright, 1994). CBA clauses did not seem to enhance workers' voices in restructuring processes, based on Swiss and French case studies (Bonvin et al., 2013). During Greece's economic crisis in the early 2010s, sector-level CBA wages in the metal industry sector were considered legally binding in subsectors facing low product market competition, but firms suffering losses made use of the opt-out clause in their sectoral agreements to negotiate firm-level wage agreements (Nicolitsas, 2020). In the Netherlands CBA clauses largely compensated for declining welfare state coverage with respect to disability and work-life arrangements, shown in a study using coded data from the FNV Database of CBAs from 1995 to 2008 (Yerkes and Tijdens, 2010). The studies discussed here reveal a scattered pattern and are typically focused on a small number of clauses, which were predominantly coded manually for the selected CBAs, challenging for an EU-wide approach.

2.3 Which Topics are on the Bargaining Agendas?

One would expect to find quite some reviews regarding the topics included in CBAs, but actually we found few. The Estonian government applies a present/absent coding scheme for the CBAs concluded in its archive

Kollektiivlepingute andmekogu, showing that the list of topics varies across CBAs. Schulten (2018, 78) provides a table based on information regarding extended CBAs from the German Ministry of Labour, covering 13 broad categories, namely: general framework agreements; wages and salaries; additional pensions; capital-forming benefits; holidays and holiday bonuses; minimum wages; wage structure; apprenticeship pay; training; annual bonuses; dismissal/job protection; working time, and a category 'other'. According to the author, around 80 per cent of all extended CBAs covered issues other than basic wages and more than one-fifth concerned general framework agreements (*Manteltarifverträge*). The extended CBAs covered mostly topics such as additional pensions, capital-forming benefits, holidays and holiday bonuses and a few regulated annual bonuses, wage structures, training, employment protection, and working time. In France, the Ministry of Labour reports about the topics negotiated, showing a ranking of participation, incentive, employee savings first, salaries and bonuses second, working time third, and the right to organize fourth (Ministère du Travail, 2020). In France, additions to CBAs are concluded for specific topics, such as gender equality (Charni, Greenan and Besamusca, 2021). Almost all of 181 CBAs in 23 EU countries contained clauses on wages (97%), but references to wage *increases* were much more common than references to wage *levels* (Van Klaveren and Gregory, 2019). Almost nine in ten agreements contained clauses on working hours, schedules and holidays (88%). About half to three quarters of the CBAs included clauses on sickness and disability (76%), social security (72%), training (69%), work-family arrangements (68%), medical assistance (65%), job security (63%), and internal mobility (50%). Fewer agreements had clauses on work organisation (38%) and relatively few on agreed workforce numbers (8%). The topics included in multi-employer and single-employer CBAs hardly differed, except for wage increases and training topics which were noticed significant more frequently in multi-employer CBAs whereas work organisation was found more often in single-employer CBAs. In Italy, Fondazione di Vittorio and ADAPT publish every year a report on second-level collective bargaining in Italy with qualitative and quantitative analysis on agreements' clauses (Fondazione di Vittorio, 2022; ADAPT, 2022), for which the National Council for Economics and Labour (CNEL) makes available an online archive where the contents of collective agreements on specific clauses is already identified. Moreover, several scholars have studied the specificity of the Italian industrial relation system (Pulignano et al., 2018) characterized by i) the prevalence of sectoral collective agreements that cover around 90% of private employees, ii) the scarce diffusion of second-level agreements that concerns only 20% of Italian companies, despite incentives over time to decentralisation (Carrieri et

al., 2018) iii) declines and revivals of tripartite social pacts during the last three decades (Regalia and Regini, 2004).
In our research, we came across a few empirical study tracing trends in bargaining topics. Using country reports provided to the ILO, it was shown that in many parts of the world clauses expanded to include topics such as work organization, vocational training, the regularization of employment, and parental leave and family responsibilities (Hayter and Stoevska 2010).

2.4 Leximetric Coding of Legal Texts

An analysis of the content of the CBAs requires an understanding the CBAs full-text. Two methods are at hand to study the content, namely interviewing the persons who have been involved in the preparation or use of the texts or coding the content of the CBAs full text. The latter refers to the so-called leximetric coding of legal texts. This method is particularly suited if the study requires understanding texts in detail, as is relevant for CBAs, some of which may be hundreds of pages long. Leximetric coding has for example been applied in the Labour Index of the Centre for Business Research of the University of Cambridge, abbreviated as the CBR-LRI dataset, as to code labour laws, case law, collective agreements, and regulations in many countries (Adams et al., 2017). It has also been applied in the Mapping Employment Dismissal Law study to measure employment protection legislation (EPL) stringency over five years (2009 – 2013) for some hundred countries (Freyens and Verkerke, 2017). Another example is the leximetric coding of 12 variables, derived from the constitutions of private companies incorporated within Scotland (Hardman, 2020). Based on the leximetric coding of 46 aspects of national labour laws in 115 countries the Labour Rights Index provides insight in the legal variation across countries (Ahmad, 2020). It should be noted that leximetric coding only clarifies the legal texts coded. Measuring compliance with legal texts requires additional methods, such as surveys.
Coding of texts is also applied in other academic fields, as is shown by the Manifesto Project with a content analysis of parties' electoral manifestos of over 1,000 parties, covering several decades and over 50 countries. The Manifesto Dataset provides coded data for statistical analysis. Whenever coding texts, a coding scheme must be prepared, tested and where needed revised, before actual coding can start. Kucera (2007) provides an overview of methodological challenges for the coding of texts and the related construction of indexes or indicators. For example, once several texts have been coded, backward coding is needed if new coding questions are added. Increasingly, tools are available for coding texts to reduce human efforts, such as text-mining technologies, discussed in the next section.

3. CBAs and their Registries in Europe. An Overview

3.1 CBA Registries

Collective bargaining is central to wage-setting and working conditions but in Europe knowledge about what exactly is concluded in CBAs is limited. To increase this knowledge, in a first step insight is required into the extent that CBAs are registered in the European Union. In order to be legally binding, in 14 EU countries all CBAs are registered whereas in ten countries (Croatia, Czechia, Finland, Greece, Latvia, Luxembourg, Poland, Romania, Slovakia, Slovenia) this is only the case for multi-employer agreements (sectoral agreements). In two countries (Ireland and Malta) CBAs are partially registered and in one country (Denmark) CBAs do not need to be registered. If registered, registration is carried out by the Ministries of Justice or Labour, by the Labour Inspectorate or in one country by a Mediation Institute. Registration typically aims to verify whether the bargaining actors are eligible and whether general and specific validity criteria are met, for example compliance with national Minimum Wage legislation. The main reasons why single-employer CBAs are not registered or why they are not publicly available, are competition across enterprises, intellectual property rights, or access for members only.

As a second step, for the 27 EU countries insight is needed in to what extent CBAs are centrally archived and made publicly available. Most Ministries maintain an archive of the registered CBAs (Table 1, 3rd column), though in some countries this task is assigned to an agency, such as CNEL in Italy. In Sweden the Institute for Labour Mediation maintains an archive. In Denmark, where registration is not required, the Confederation of Danish Employers (DA) maintains a CBA archive. In the Netherlands three archives are maintained, respectively with the Ministry of Social Affairs and Employment, with the organisation servicing the employers' association, and with the largest trade union confederation. Overall, we found archives in whatever form in 26 countries. Only Malta does not maintain an archive.

In previous decades, governments mostly announced the agreements declared binding in the Government Gazettes. Increasingly they post them online, but two countries (Croatia and Latvia) still publish CBAs in their Gazettes. In the 2010s social partners in Europe increasingly published the CBAs they had signed online, usually in PDF format. While in the early 2000s copyright issues as well as commercial restrictions regarding the publication of CBA texts were at stake, today the registries and the social partners in many EU countries publish CBA texts free downloadable. Often CBA texts are considered to be legal texts and therefore they should be freely accessible to citizens.

Maintaining an archive however not implies that CBAs are freely and full-text online available. Nine archives make all CBAs full-text online downloadable while nine do so for multi-employer CBAs though not for single-employer CBAs (Table 1, 4th column). In Denmark and Sweden an employer's organisation, respectively a trade union confederation, publishes the CBAs they have signed online. Four countries do not publish CBAs online: Germany, Hungary, Ireland and Malta.

Registries typically register the metadata from the CBAs including the name(s) of the company or the sector covered; the names of the signatories from the employer and employee side; the operative date, and, if agreed, the duration or the end date. Registration of the number of employees covered by the agreement can only be noticed in eight EU countries: Bulgaria, Estonia, France, Hungary, Ireland, Italy, Lithuania, and Spain. Based on the experience of the WageIndicator CBA Database, the number of employees covered shows up as one of the variables most difficult to trace, especially in cases with workforces covered by multiple agreements:

Table 1. Country, Name of CBA Registry, CBA Archive Maintained, Full Text Availability.

Country	Registration by	Arch	Full text available
Austria	Federal Ministry of Social Affairs, Health, Care and Consumer Protection	Yes	Yes, all CBAs
Belgium	Directorate-General for Collective Labour Relations	Yes	Yes, all CBAs
Bulgaria	Ministry of Labour and Social Policy	Yes	Yes, all CBAs
Croatia	Ministry of Labour, Pension Systems, Family and Social Policy	Yes	Yes, in Gazette
Cyprus	Ministry of Labour, Welfare and Social Insurance	Yes	Yes, multi-employer CBAs in PDF scans
Czechia	Ministry of Labour and Social Affairs	Yes	Yes, multi-employer CBAs
Denmark	No state registration	Yes	Yes, partial
Estonia	Ministry of Labour	Yes	Yes, all CBAs
Finland	Ministry of Justice	Yes	Yes, multi-employer CBAs
France	Ministry of Labour	Yes	Yes, all CBAs
Germany	Federal Ministry of Labour and Social Affairs	Yes	No
Greece	Ministry of Labour – Labour Inspectorate	Yes	Yes, multi-employer CBAs
Hungary	Ministry of Innovation and Technology	Yes	No
Ireland	Labour Court Register of Employment Agreements	Yes	No
Italy	National Council for Economics and Labor	Yes	Yes, multi-employer CBAs

Country	Registration by	Arch	Full text available
Latvia	Ministry of Justice	Yes	Yes, in Gazette
Lithuania	Ministry of Social Security and Labour	Yes	Yes, all CBAs
Luxembourg	Inspectorate of Labour and Mines	Yes	Yes, multi-employer CBAs
Malta	Department for Industrial and Employment Relations	No	No
Netherlands	Ministry of Social Affairs and Employment	Yes	Yes, all CBAs
Poland	Ministry of Family, Labour and Social Policy	Yes	Yes, multi-employer CBAs
Portugal	Ministry of Labour	Yes	Yes, all CBAs
Romania	Ministry of Labour, Family and Social Protection	Yes	Yes, multi-employer CBAs
Slovakia	Ministry of Labour, Social Affairs and Family	Yes	Yes, multi-employer CBAs
Slovenia	Ministry of Labour, Family, Social Affairs and Equal Opportunities	Yes	Yes, multi-employer CBAs
Spain	Ministry of Employment and Social Economy	Yes	Yes, all CBAs
Sweden	Swedish national mediation office	Yes	Yes, partial via Trade Union

Source: Inventory of online CBA registries made by the authors for the COLBAR-EUROPE project in 2020 and updated in 2021/22.

3.2 Coding of CBA Characteristics

Given that almost all EU countries maintain a registry of the CBAs declared binding, do they provide information about the content of the CBAs, for example by identifying whether keywords are present, by identifying the headings in the texts, by annotating relevant pieces of texts, by coding annotated texts, or by registering wage levels or wage increases? Our inventory revealed that most registries provide structured information regarding the meta data, but only few do so regarding the full texts. The Estonian registry provides a good example of keyword identification by comparing CBA clauses to the relevant legislation. The registry in Austria provides a fine example of identification of headings in a CBA text, with clicks to the related content. In the Netherlands, the FNV confederation applies full-text coding for more than 500 variables; the organisation servicing the employers' association codes the changes in CBAs, while the Ministry of Social Affairs codes CBAs for specific research objectives.

The coding of working conditions is relatively easy compared to coding wages, provided a tested coding scheme. In contrast, the coding of agreed wages is more difficult because CBAs either register an agreed wage increase or agreed wage levels. Particularly the coding of the latter is difficult due to the

complicated nature of pay structures in CBAs and the diversity of structures applied across CBAs (Armstrong, 2007; Besamusca, 2021). Based on a study of 181 CBAs in 23 EU countries almost twice as many CBAs contained clauses about wage increases than about wage levels (Van Klaveren and Gregory, 2019). A study of 108 commerce CBAs in EU28 presented similar conclusions. Only one-third contained details about wage levels, whereas wage increases were reported more often (Besamusca et al., 2018). However, for 602 agreements from all EU countries, an equal percentage of CBAs with wage increases and with pay scales (both 66%) was reported (Besamusca, 2021). Coding pay scales is demanding because of their complexity and company-specific terminology. For cross-country comparisons of agreed wages, wages need to be converted into hourly wages, requiring information about the agreed working hours per week and per year. Finally, for computing the level of agreed wages in a national labour force, information about the distribution of enterprise workforces over the pay scales is required. We did not come across any registry providing the latter data. The Netherlands Statistical Office calculates the annual increases of agreed wages, based on selected CBAs and selected enterprises reporting about the wage distribution. The coding of wage increases can result in a computation of an average negotiated wage increase, and we came across two registries publishing the negotiated wage increase on a twelve-month basis, namely CAO-kijker in the Netherlands, and WSI-Tarifarchiv in Germany.

3.3 The Number of CBAs in Europe

When aiming to increase knowledge about what exactly is concluded CBAs, an estimate of the number of CBAs in the EU could provide an impression of the work ahead. Answering this question is easier for the number of multi-employer agreements than for the single-employer agreements. In most countries the stock of multi-employer agreements remains relatively stable, whereas the stock of single-employer agreements is volatile because of entries and exits due to mergers, bankruptcies, or removals. The real number of CBAs will be underestimated in countries where single-employer agreements do not need to be registered or where the signatories do not disseminate their CBA text beyond the enterprise or beyond their membership. We tried to estimate the number of CBAs in Europe by counting the number of CBAs in the CBA registries. When information from registries was missing two sources were used, namely the ETUI website about National Industrial Relations based on Fulton (2020), and the Eurofound website about the country profiles.
The number of multi- and single-employer collective agreements throughout the EU is estimated at slightly over 85,000 (Table 2). Note that this estimate is

seriously hampered by the fact that for more than half of the EU countries information about the number of single-employer agreements is lacking. Single-employer agreements could not be counted for Cyprus, Czechia, Ireland, Luxembourg, Malta, Poland, Portugal, Romania, Slovakia, Slovenia. For France, we counted the CBAs classified as vigour and extended. In a previous study (Tijdens, 2021), we counted all non-expired documents, but we learned that we should limit our search because many additional French documents should be considered a CBA clause rather than a CBA (Charni et al, 2021). For ten countries we counted less than 100 CBAs (Cyprus, Czechia, Ireland, Luxembourg, Malta, Poland, Portugal, Romania, Slovakia, Slovenia); for 15 countries we found between 200 and 1,400 CBAs (Austria, Belgium, Bulgaria, Croatia, Denmark, Estonia, Finland, France, Greece, Italy, Latvia, Lithuania, Netherlands, Spain, Sweden). Further, we counted almost 3,000 CBAs for Hungary and more than 73,000 CBAs for Germany, in which country single-employer agreements are accurately registered and counted. Hence, Germany makes up almost 85 per cent of the total EU estimate.

Table 2. Estimated Number of Collective Agreements, the Counting Method, a Breakdown by Multi- and Single-employer Agreements (resp. MEB and SEB) if available, and the Year Applicable to the Estimate, by country

Country	Counting	Estimate #	Of which MEB	Of which SEB	Year
Austria	in force	560			2021
Belgium	in force	240			2021
Bulgaria	concluded	754	14	740	2020
Croatia	in force	570	16	554	2014
Cyprus	multi-employer CBAs in force	68			2021
Czech Rep.	In force	14			2021
Denmark	in force	600			2021
Estonia	in force	677			2021
Finland	in force	158			2021
France	in force	655			2021
Germany	in force	73,000			2021
Greece	in force	271			2021
Hungary	in force	2,869	87	2782	2019
Ireland	in force	3	3		2019
Italy	in force	992[1]			2021
Latvia	in force	1152	8	1144	2016
Lithuania	in force	456			2021
Luxembourg	in force	33			2021
Malta	in force	34	34		2021
Netherlands	in force	658	485	173	2020
Poland	in force	61	61		2021
Portugal	in force	39	15	24	2021
Romania	in force	36	17	19	2019
Slovakia	in force	18	18		2021
Slovenia	in force	50			2021
Spain	in force	849	693	156	2020
Sweden	in force	700			2020
Total		85,517			

Source: Inventory of online CBA registries the authors made for the COLBAR-EUROPE project in 2020 and updated in 2021/22. Where registries were absent, websites from ETUI (www.worker-participation.eu) or from national research institutes were consulted.

How many CBA texts can be gathered for a Europe-wide data collection? Based on Tables 1 and 2 we can conclude that in nine countries in total slightly over 6,000 texts from all CBAs are available online. In another nine countries

[1] Data provided by CNEL (2022).

some 2,000 texts of all multi-employer CBAs are available online. In two countries 1,300 CBA texts are available, the large majority of all CBAs. Finally, in three countries with together almost 1,800 CBAs the texts could be collected from the Gazettes or from PDF scans. For four EU countries it will be difficult to collect CBA texts. When excluding the large number of CBAs in Germany, the universe of CBAs in 26 EU countries consists of almost 13,000 CBAs, of which approximately 8,000, thus two thirds, could easily be gathered online.

The gathering, uploading, annotating and coding of these 8,000 CBAs will require substantial resources annually, at least when assuming that most CBAs are renewed per year. To reduce the efforts, sampling CBAs to generate a representative picture could be considered. Sampling could be based on selecting one of more CBAs with the largest number(s) of covered workers in the industry. If no data is available regarding the number of workers covered, the CBAs in the industry need to be randomly sampled. Hence, the CBAs need to be identifiable by NACE industry code. We found that some registries provide NACE codes, but others do not, requiring additional efforts to classify CBAs according to their NACE code.

4. An Example of a Multi-Country CBA Database

Our study aimed to explore ways to increase the knowledge about what wages and working conditions are concluded in CBAs across EU-countries, thereby raising the question regarding the feasibility of an EU-wide database of CBA texts. This section outlines the building blocks of such an EU-wide CBA Database. It addresses the requirements for gathering, coding and annotating CBAs and does so by detailing the WageIndicator CBA Database. To the best of our knowledge, this database is the only one that gathers and codes CBA full texts in the EU-27 countries and beyond.

4.1. The WageIndicator CBA Database

WageIndicator Foundation is a non-profit NGO that develops, operates, and owns national WageIndicator websites with labour-related content. The first WageIndicator website was launched in the Netherlands in 2001. Today, the websites are operational in over 190 countries; in 2021 WageIndicator received 40 million web visitors. WageIndicator shares and compares information on wages, labour law, and careers by making relevant information freely available on easy-to-reach-and-read websites in the national language(s). To attract a large audience, the websites apply search engine optimization as to meet the search terms that web visitors use in Google search and other search engines.

The pages in the websites are filled from databases maintained by WageIndicator, namely a Collective Agreements (CBA) Database, a Minimum Wages Database, a Living Wages Database and the related Cost-of-Living Survey, a Salary Check and a related Salary and Working Conditions Survey, and a Labour Law Database and the related DecentWorkCheck survey.
For its CBA Database, the Foundation has developed a web-based platform for uploading, annotating, and coding CBA texts, using a predefined coding scheme. A web-based platform is advantageous because it allows annotators to work from any place in the world and the CBAs while the annotated and coded content are centrally archived. The CBA Database aims to enrich the content of the national WageIndicator websites and allows users to browse CBAs online and to view CBA visualizations. The annotated CBA texts are published on the national websites.
The initial idea to publish CBAs online came from social partners in developing countries, who experienced high costs and logistic difficulties when distributing the printed texts of the agreed CBAs to the employers and employees covered. In December 2013 the very first CBA was entered in the platform. Initially mainly CBAs from developing countries were entered, but by early 2022 the Database contained almost 1,700 agreements from 61 countries, of which approximately half from European countries. The database allows to conduct statistical analysis, because it is accessible using statistical software. The database has been used for analyses in EU Social Dialogue projects, in the garment industry in Indonesia, regarding the work-family balance in CBAs, and regarding wage and remuneration-related CBA clauses in middle- and low-income countries (Ceccon, 2017; Besamusca and Tijdens, 2015). Through BARCOVID, the authors' latest EU project, the CBA Database will be populated with renewed CBAs, allowing a longitudinal comparison of the clauses agreed. BARCOVID also allows further text mining explorations to speed up coding.

4.2 Gathering CBA Texts

WageIndicator employs three approaches for gathering full-text agreements: downloading from national registries, smart Google searches, and asking directly bargaining signatories. In some cases, the latter turned out to problematic when signatories are unwilling to share their CBAs for competitive reasons in case of single-employer agreements (Poland and Hungary), or because they are available for union members only (Germany). Countries with the lowest coverage rates happen to be the countries posting their agreements least online.

Gathered CBAs can have various formats, e.g., Word, PDF, or JPEG, or even a printed booklet. These formats need to be converted, or 'cracked', into a plain text editor. In a next step, Amaya software is used to assign headings for titles, chapters, and articles. Then, the text can be uploaded in HTML format in the WageIndicator CBA Database. This process can be a time-consuming effort, specifically in case of long full texts, or in case of tables. Once texts are uploaded on the platform, they can be coded.

4.3 Coding CBA Texts

A coding scheme for the gathered CBAs is a precondition for any statistical analysis of the content of CBAs. For the CBA Database, a coding scheme has been developed, aiming to capture the critical elements. The coding scheme falls apart into two sections, namely metadata and content. The metadata refers to the signatories: employers or their associations, trade unions, or in some cases, works councils or professional associations, and to the operative date as well as the duration of the CBA, if agreed. Metadata also refers to the status of the CBA, i.e., a single-employer or a multi-employer CBA, a framework agreement, an appendix, a transnational agreement, whether a ratification process is applicable, whether the CBA has force of extension to employers who do not conclude the agreement, and whether certain groups of workers are included or excluded. In the case of a multi-employer CBA, the identification of sectoral boundaries is required. If possible, the number of employees covered is to be registered if given, otherwise this information has to be collected from negotiators, which is challenging task. For the registration of the name of the CBA, the CBA Database developed a pick list. Using a pick list is preferred over keying in the CBA names, because of the risk of typing errors, due to which two CBAs might not be identified as being a renewed CBA.

The coding scheme addresses ten topics (Table 3). Each topic starts with a Yes/No question: Does the CBA include any clauses on this topic? If so, the coding scheme follows with detailed questions. If not, the scheme moves on to the next topic. The coding scheme of the WageIndicator CBA Database generates 740 variables (Ceccon and Medas, 2022). Annotators read the full text to select the sentence or sentences relevant for the question in the coding scheme and enter a numerical answer to the question. Both elements, the selected text as well as the numerical code, are stored in the CBA Database.

Table 3. Ten Topics in the Coding Scheme of the WageIndicator CBA Database

Nr	Topic
1	Job titles
2	Wages
3	Working Hours, Schedules, Paid Leaves and Paid Holidays
4	Employment Contracts
5	Work and Family Arrangements
6	Health and Safety and Medical Assistance
7	Sickness and Disability
8	Social Security and Pensions
9	Training
10	Gender Equality Issues

WageIndicator started with annotators from as many countries as needed to code the CBAs from those countries. However, time learned that CBA coding requires skilled and experienced annotators rather than native annotators unfamiliar with the coding tool. Currently, WageIndicator is has skilled, multilingual annotators who are able to manage multiple languages. In case of coding one or a few CBAs in a language not mastered, the coding team uses sophisticated translation software. If a substantial number of CBAs in a not-mastered language needs to be coded, a native annotator is trained to do so, for which WageIndicator has developed a training kit. Annotators usually need one to several hours to code one CBA, specifically in case a CBA consists of a long document.

4.4 Text and Data Mining Technologies

Thanks to the SSHOC project (EU-H2020 nr 823782), text mining for CBAs could be explored (Ceccon and Ceccon, 2020). The text-mining efforts aimed at identification of one or more keywords most typical for an annotated clause. This was done with a set of at least 30 coded and annotated CBA texts for one language: the so-called training set. A text part, which is called a clause, comprises of the text the annotator has identified as relevant for a question in the coding scheme. Across the 30 CBAs in the training set a software script identifies the most common words for each annotated clause, thereby accurately identifying the lemma for each word and disregarding redundant words. Next, several statistical models have been applied to assign the correct keyword to a clause, such as word frequency and neural network models to identify those clauses not accurately identified. In a final step, the key word set is tested on a second set of 30 manually coded CBAs, and adapted if needed.

After the test phase, the key word set can be used for automatic keyword extraction.
Today for some languages keywords are increasingly used in the coding platform of the WageIndicator CBA Database, thereby allowing annotators to look for information in the relevant text areas where these keywords have been identified, and disregard texts that do not include keyword matches.

5. By way of Conclusion: How Feasible Is an EU-Wide CBA Database?

Industrial relations theory stresses the importance of collective bargaining for workers' wages and working conditions, but the impact of collective bargaining has predominantly been studied by means of survey data providing a binary variable for being covered or not. Very few studies have been able to connect data with information about workers' coverage status to the name of the collective bargaining agreement (CBA) and thus the characteristics of that CBA they are covered by. Coded CBA information is also needed to compare bargaining outcomes wages and working conditions across EU-countries.
To contribute to closing the knowledge gap, this article focuses on the second condition, namely to increase insight in the content of CBAs in the light of a cross-EU27 country approach. Our study shows that CBAs are registered in an archive in 26 EU countries, of which nine publish all CBAs online, nine publish the multi-employer CBAs, two publish CBAs partially, three publish them in the Government Gazette or in PDF scans, and four do not make CBAs online available. Only eight countries publish the number of workers covered. Few countries apply any form of leximetric coding of the CBA texts, for example by keyword identification, assigning headings, annotating of relevant texts, or coding annotated text. Few countries code the wages agreed, facilitating the identification of collectively agreed wages, though such efforts are hardly associated with the registries, but are performed by the Central Banks or the National Statistical Offices.
We estimated the total number of CBAs in EU27 at slightly over 85,000 – an underestimate because for almost half of the EU countries we could not identify the number of single-employer agreements. With some 73,000 CBAs Germany accounted for 85 per cent of these CBAs. When excluding the German CBAs because these texts are accessible for members only, some 8,000 CBAs from in total 20 countries can be gathered online for such a database.
The WageIndicator CBA Database with currently more than 1,700 CBAs shows that the collecting, uploading, and coding of many CBAs is technically feasible, and that the resulting dataset allows for analyses beyond the current body of knowledge. In conclusion, aiming for an EU-wide CBA Database of

8,000 yearly updated CBAs seems a doable but very challenging task. However, text-mining technologies may reduce the efforts needed, as well as targeting only one or a few sectors or limiting the number of coded CBAs by random sampling.

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Supplementary Material

The CBA Database can be downloaded from the ZENODO repository (https://zenodo.org/deposit/4475583).

Paradoxes of Technology. Reflections on Early and Late Retirement in the Digital Transition: The Case of Commercial Pilots

Fernando Elorza Guerrero [*]

Abstract

Discrimination on ground of age has always been a matter of difficult apprehension in the legal field, especially since Council Directive 2000/78/EC of 27 November 2000 establishing a general framework for equal treatment in employment and occupation, admitted the establishment on a national basis of justified differences in treatment, in view what it described as legitimate objectives of employment or labor market. Although technological innovation is often seen as a possible vector for the expulsion of older workers, finally it can also constitute an appreciable element when it comes to inducing the permanence of older workers as assets in the labour market. In this sense, this article reflects on the peculiar situation experienced by pilots and co-pilots when making decisions about their professional life, in view of the current legislation, the evident technological advances in the commercial air transport sector, and the imperatives derived from aeronautical safety.

Keywords: *Discrimination; Age; Retirement; Digital Transition; Airline pilots.*

1. Introduction

Age discrimination has always been a difficult issue to apprehend from a legal perspective. In fact, Council Directive 2000/78/EC of 27 November 2000, establishing a general framework for equal treatment in employment and occupation, acknowledged that the prohibition of age discrimination, despite it being 'an essential part of meeting the aims set out in the Employment

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Guidelines and encouraging diversity of the workforce', admitted the establishment, at the national level —it actually referred to the possibility of adopting 'specific provisions which may vary in accordance with the situation in Member States'—, of differences in treatment. These differences were justified in view of what was described as 'legitimate employment policy, labour market and vocational training objectives' (recital 25).

At the same time, recital 26 of the Directive argued that 'the prohibition of discrimination should be without prejudice to the maintenance or adoption of measures intended to prevent or compensate for disadvantages suffered by a group of persons' of, for instance, a certain age. However, the question is, as it has already been pointed out, that 'there is limited collective perception of the unjustified and harmful nature of differences in treatment on the basis of age, which often leads to their being accepted without question'.[1] This circumstance is probably connected to the peculiar nature of age as a discriminating factor, which 'on the one hand, facilitates a lesser attachment of people to it, while, on the other, favours a greater tolerance of practices that affect it'.[2]

In general terms, although technological innovation is often seen as a possible vector for the expulsion of older workers, it may also be a significant element in supporting their permanence as active workers in the labour market.[3] In fact, technology may be considered a powerful ally when it comes to that permanence. In this sense, it is possible to say that technological progress has an ambivalent nature: it may expel from the labour market older workers who cannot adapt to technological change, or whose position disappears as a result of that change, but, at the same time, it may promote their active presence in the market.

The present article reflects on the paradoxical nature of technology, which proves to be especially interesting when the focus is set on a specific group of workers, such as airline pilots and co-pilots. As some specialists have pointed out, 'neither technological progress applied to aviation nor the developments expected from artificial intelligence in this field are irrelevant' nowadays.[4] In fact, in the last few years we have witnessed, besides the use of computerized

[1] Sanguineti Raymond, W., 'La edad: ¿cenicienta de las discriminaciones?', *Trabajo y Derecho*, 2019, No. 59, p. 10.

[2] Sanguineti Raymond, W., 'La edad: ¿cenicienta de las discriminaciones?', *op. cit.*, p. 10.

[3] For this issue, it may be interesting to see Jafarova, S., Gurzaliyeva, U. and Masso, A., 'The effect of technological innovation on age-specific labour demand', *Growinpro* (working paper), February, 2021, No. 1, which can be found in: http://www.growinpro.eu/wp-content/uploads/2021/02/working_paper_2021_35-1.pdf

[4] Casas Baamonde, M. E. and Ángel Quiroga, M., 'Supuesta discriminación por razón de edad: jubilación forzosa de pilotos de aeronaves a los 60 años', *Revista de Jurisprudencia Laboral*, 2019, No. 8, p. 13.

flight plans in 'automatic pilot' systems, the development of successive technological advances in pilotage that are rapidly bringing commercial aviation closer to being performed without any human intervention in the cockpit. The vertiginous technological development that has enabled the manufacture of drones is a living example of it.

Admitting that the future of aviation will include highly automatized flights, the present is still unfolding within a working space, the cockpit, that brings together increasingly evolved technological tools and specialized workers—pilots and co-pilots—whose activity is very much conditioned by aviation and labour regulations, thus representing a good example of the above-described paradox. Along with international regulations, which stipulate the conditions for the consideration of those workers as active, particularly from an aviation safety perspective, there are national regulations that develop them but, at the same time, contemplate the possibility of an early retirement and, according to the dictates of international aviation legislation, make it difficult, if not prevent, the extension of the working life of pilots and co-pilots after a certain age.

Generally speaking, it seems natural to think that technology supports the extension of working life. But this is not actually happening, because, among other reasons, in the specific field of air transport, aviation safety considerations are still prioritized over the specific psychophysical situation of pilots and co-pilots. This question will be discussed in the following section.

2. International and European Union Commercial Pilot Licence Regimes

The undisputable benchmark in what regards international pilot licence standards is the Convention on International Civil Aviation (hereinafter, Chicago Convention),[5] signed in Chicago, on December 7, 1944, and ratified by all European Union Member States, although the European Union as such has not. In Annex I ('Personnel licencing') of the convention, the International Civil Aviation Organization (ICAO) gathers the norms and methods recommended for the issuance of pilot licences, and establishes the following:

> 2.1.10.1 A Contracting State, having issued pilot licences, shall not permit the holders thereof to act as pilot of an aircraft engaged in international commercial air transport operations if the licence holders have attained their

[5] This convention is at the basis of the creation of the International Civil Aviation Organization (ICAO). According to article 44, the objectives of this organization are 'to develop the principles and techniques of international air navigation and to foster the planning and development of international air transport'.

> 60th birthday or, in the case of operations with more than one pilot, their 65th birthday.
> 2.1.10.2 Recommendation. A Contracting State, having issued pilot licences, should not permit the holders thereof to act as co-pilot of an aircraft engaged in international commercial air transport operations if the licence holders have attained their 65th birthday.

As shown, the position of the ICAO regarding this issue is clear and forceful, and does not admit any exceptions in the case of pilots over 65 years. The possibility of contracting states issuing licences, or acknowledging their validity, to pilots aged 65 years or more is not considered, while pilots aged 60 and over may only command an aircraft accompanied by another pilot below that age. In the case of co-pilots, the Chicago Convention is not favourable to the extension of their activity in commercial flights after they turn 65.

In consonance with the Chicago Convention, the Joint Aviation Requirements–Flight Crew Licence 1 (JAR-FCL1)—which are the other international aviation standards that need to be taken into consideration in relation to this matter—,[6] specify, in point 1.060:

> Curtailment of privileges of licence holders aged 60 or more:
> a) Age 60–64: The holder of a pilot licence who has attained the age of 60 years shall not act as a pilot of an aircraft engaged in commercial air transport operations except:
> 1) as a members of a multi-pilot crew and provided that
> 2) such holder is the only pilot in the flight crew who has attained age 60.
> b) Age 65: The holder of a pilot licence who has attained the age of 65 years shall not act as a pilot of an aircraft engaged in commercial air transport operations.

As regards European Union (EU) law, Commission Regulation (EU) No. 1178/2011, of 3 November 2011, laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) 216/2008 of the European Parliament and of the Council, is the norm that regulates the activity of commercial pilots.[7] Annex I, point

[6] The international standards of private, commercial or airline pilots are drafted by an international organization called Joint Aviation Authorities. Among these standards, the Joint Aviation Requirements–Flight Crew Licensing 1 (hereinafter JAR-FCL 1) were adopted on April 15, 2003.

[7] According to point FCL.010 of Annex I in Regulation 1178/2011, 'commercial air transport' should be understood, for the purpose of this norm, as 'the transport of passengers, cargo or mail for remuneration or hire'. On the other hand, the pilots affected by this EU law are, basically, those of: a) aircraft registered in a Member State, unless their regulatory safety oversight is delegated to a third country and they are not used by an EU operator; b) aircraft

FCL.065 ('Curtailment of the privileges of licence holders aged 60 years or mor in commercial air transport') of this regulation establishes the following:

> a) Age 60–64. Aeroplanes and helicopters. The holder of a pilot licence who has attained the age of 60 years shall not act as a pilot of an aircraft engaged in commercial air transport except:
>
> 1) as a member of a multi-pilot crew; and
>
> 2) provided that such a holder is the only pilot in the flight crew who has attained the age of 60 years.
>
> b) Age 65. The holder of a pilot licence who has attained the age of 65 years shall not act as a pilot of an aircraft engaged in commercial air transport.

As expected, this EU norm translates almost literally point 1.060 of the international JAR-FCL 1 norm.

In summary, international and EU regulations advocate, in general terms, the non-extension of the working life of pilots beyond the age of 65. This legal criterion, which has the status of a peremptory norm, has remained unchanged over time, and technological progress in aviation has not affected the ICAO's will to maintain it nor its lack of consideration to the possibility of extending the working life of pilots, in contrast with the general position of the EU on this matter in recent years. In this sense, it is possible to affirm that commercial aviation is a world apart, impervious to EU policies on the extension of the working life of pilots and co-pilots. Nevertheless, this norm does not prevent the establishment of a legal framework allowing the early retirement of pilots, an option that, in the case of Spain, has been well received and has led to the approval of the corresponding regulation, which acknowledges the peculiar conditions in which piloting takes place, and the psychophysical weariness resulting from this activity.

3. Reduced Retirement Age for Pilots

Spanish social security legislation has traditionally considered, as an exception to the general rule of ordinary retirement at 65 years of age—currently, 66 years and 2 months—, the reduction of the ordinary retirement age for flight personnel, including airline pilots.[8] This special regime is regulated by Royal

registered in a third country and used by an operator supervised by a Member State, or by an operator established or resident in the EU in routes entering or exiting EU territory or located within it.

[8] As established by the judgement of the Spanish Supreme Court (Labour Chamber) of 14 December 1999 (rec. No. 1183/1999), and later on confirmed by the judgement of the Supreme Court (Labour Chamber) of 27 January 2009 (r.c.u.d. No. 1354/2008) in relation to a flight technician, Royal Decree 1559/1986, of 28 June, reducing the retirement age of technical

Decree 1559/1986, of 28 June, reducing the retirement age of technical flight personnel,[9] which was issued in accordance with the provisions of article 154.2 of the General Social Security Law (hereinafter, GSSL)—nowadays article 206 of the GSSL.[10] This legal provision acknowledges that the minimum age allowing access to 100% of the retirement pension may be reduced by a governmental Royal Decree, as proposed by the Ministry of Inclusion, Social Security and Migrations, 'for those professional groups or activities involving exceptionally arduous, toxic, hazardous or unhealthy work, and affected by high morbidity and mortality rates, providing that the workers concerned fulfil the minimum period of activity required as per their profession or position'.

The specially hazardous and arduous conditions in which the work of airline pilots and, in general terms, that of aircrews engaged in commercial air transport is performed, as well as 'the premature ageing' experienced by these workers under such conditions—using the words of the Spanish Supreme Court and of the preamble to Royal Decree 1559/1986[11]—and the obligation of these crews to periodically undergo medical and psychophysical examinations that may determine the revocation of their flight licences at an earlier age than that of ordinary retirement, have justified for years the specific and restrictive treatment of their working lifespan. In the case of Spain, article 6.3 of currently in force Royal Decree 270/2000, of 25 February, laying down the conditions for the exercise of the functions of civil aircraft flight personnel,[12] establishes that the holder of a licence having attained the age of 60 years shall not act as a pilot in an aircraft engaged in commercial air transport operations, except as a member of a multi-pilot crew and providing that they are the only pilot in the crew who has attained that age. In all cases, the work of pilots aged 65 and older is forbidden. Before this norm was approved, Royal Decree 959/1990, of 8 June, on civil aeronautical licences and qualifications,[13] which was later on repealed, established that the holder of a licence aged 60 years or more could not 'act as a pilot in command or a co-pilot in air transport services performed for remuneration or hire' (article 2.2).[14]

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flight personnel, is also applied to the staff of aircraft engaged in transport of passengers and cargo.

[9] Boletín Oficial del Estado (BOE, Official State Gazette), No. 182, of 1 July 1986.

[10] Promulgated by Royal Legislative Decree 1/1994, of 20 June, approving the consolidated text of the General Social Security Law (BOE, No. 154, of 29 June 1994), which has been successively modified over the years.

[11] In the judgement of the Supreme Court (Labour Chamber), of 14 December 1999 (rec. No. 1183/1999), quoted above.

[12] BOE, No. 64, of 15 March 2000, successively amended.

[13] BOE, No. 177, of 15 June 1990.

[14] It had, in turn, repealed a Decree of 13 May 1955, on civil aeronautical qualifications.

This is the context in which this exceptional regime regulated by the above-mentioned Royal Decree 1559/1986 must be situated. In consonance with the above said, this norm considers the reduction of the minimum age of 65 required to qualify for a retirement pension that is equivalent to the time 'resulting from applying to the time effectively worked' a reduction coefficient of 0.40 in the case of pilots and second pilots (article 1).[15] In order to calculate the time effectively worked, the regulatory norm establishes that all the time off work shall be deducted, with the only exception of 'medical leaves due to ordinary or occupational disease or accident at work, whether or not work-related', and 'those authorized by the corresponding labour regulations with entitlement to retribution' (article 3). Likewise, it establishes that 'the amount of time deducted from the retirement age of the worker […] shall be counted as having made contributions for the only purpose of determining the percentage applicable for calculating the amount of the retirement pension' (article 4).[16]

In any case, it is important to underline that the logic behind this regulatory norm is that of reducing the retirement age of pilots and co-pilots in an amount of time that is proportional to the number of years they have developed their activity. At the same time, in order to avoid the damage that a premature access to the retirement pension may cause to those professionals, the law establishes the legal fiction of counting the amount of time in which the retirement is brought forward as having made contributions. This technique is not the only one applied to groups that are legally benefitted by he reduced retirement age regime. By way of example, the case of disabled

[15] The norm establishes a 0.30 coefficient in the case of 'aircraft maintenance technician, air photography navigator-operator, technology operator, aerial photographer and air camera operator'.

As established in article 2 of Royal Decree 1559/1986, the minimum age of 65 required for entitlement to a retirement pension is reduced 'in an amount of time that is equivalent to the one resulting from applying to the time effectively worked in each professional category and specialty' specified in the Royal Decree the coefficient specified in that norm, i.e., 0.40 or 0.30. In any case, it is important to take into consideration that the reduction of retirement age in Spain has been traditionally implemented in two different ways: 1) by applying reduction coefficients to the time effectively worked in situations that justify such reduction—this is the formula used in the case of pilots and co-pilots—; and 2) by establishing a minimum retirement age below the ordinary retirement age. This second mechanism is considered to be indifferent to the worker's actual situation because it does not take into account the time that the worker was exposed to the hazardous or arduous conditions of their work. In fact, this has been historically the least applied procedure.

[16] The regulatory norm establishes as well that 'for contribution purposes, both the age reduction and its calculation shall be applied to the retirement of workers to whom the provisions of this Royal Decree are applicable and under any social security regime' (article 5.1).

workers may be mentioned, in which Spanish legislation set an age from which the which they may retire (52 years, from the end of 2021 onwards), thus avoiding the application of reduction coefficients.[17] The decision, in this case, is based on the belief that disabled workers often suffer diseases that tend to reduce their life expectancy.

However, in recent years the regulatory context around this norm has changed, as has, ultimately, the perception of retirement at a lower age. In contrast, the regime applied to pilots and co-pilots has not, which, as shown below, has its consequences.

3.1. The Reform of the Reduced Retirement Age Regime by Law 40/2007 and its Regulatory Development

Law 40/2007, of 4 December, on measures concerning social security matters,[18] added a new provision to the GSSL, article 161 bis, which modified the previously in force article 161.2 of the GSSL and, in general terms, the reduced retirement age regime. Basically, Law 40/2007 integrated in a single and specific precept the treatment of early retirement and ordinary retirement at a lower age, a situation that was criticized by the legal doctrine in Spain, which rightly pointed out that the case herein discussed is not a typical early retirement case. Even if retirement takes place before the ordinary retirement age, the reduced retirement age is the one ultimately considered as ordinary for the groups that can benefit from it, in our case pilots and co-pilots.[19] In addition, it is necessary to take into account that, in contrast with early retirement, which is always penalized, ordinary retirement at a lower age is not, given that the workers retire when it is time for them to do it.[20]

In addition, the above-mentioned Law of 2007, in consonance with the legislative reforms of that period, which incentivized delayed retirement, introduced for the first time an important nuance, which had not been considered by Royal Decree 1559/1986 and implied that 'the establishment of

[17] In the last few years, the minimum age to qualify for this type of retirement has been progressively reduced. Before Law 27/2011, of 1 August, updating and modernizing the social security system, came into force, the age was set at 58 years; after the norm came into force the age was lowered to 56 years. Subsequently, Law 27/2021, of 28 December, guaranteeing the purchasing power of pensions and other measures to reinforce the financial and social sustainability of the public pension system (BOE, No. 312, of 29 December 2021), set the currently accepted age.

[18] BOE, No. 291, of 5 December 2007.

[19] Martínez Barroso, M. R., 'El impacto de las jubilaciones anticipadas en el sistema de pensiones', *Temas Laborales*, No. 103, 2010, p. 117.

[20] In this sense, see González Ortega, S.: 'La jubilación ordinaria', *Temas Laborales*, No. 112, 2011, p. 141.

coefficients to reduce retirement age […] shall be applied only when the working conditions cannot be modified'.[21] In other words, thenceforth the establishment of reduction coefficients by the above-mentioned Royal Decree, i.e., through the State's action, shall only be effective when adapting the working conditions to avoid insalubrity, hazardousness, arduousness or toxicity is proved to be impossible.[22]

This legal approach, which was undoubtedly novel, responded to the legislative will to limit the expectations of multiple groups to benefit from this technique, which, in practice, provides access to early retirement. The message was clear: only when the working conditions cannot be modified shall the use of reduction coefficients be approved. It should be noted that the new legal formula ultimately introduced the spirit of Law 31/1995, of 8 November, on the prevention of occupational risks into this retirement regime.[23] Both the general principle of preventive action to the work to the person (article 15.1 d) and the dispositions of article 25 according to which entrepreneurs must specifically guarantee 'the protection of workers who, due to their personal characteristics or known biological state […] are especially sensitive to the risks associated with their work'.[24]

On the other hand, the setting, for the first time, of a minimum age to qualify for this type of retirement was also novel.[25] Law 40/2007 specified that under no circumstances could the application of age reduction coefficients lead to the workers' entitlement to a retirement pension at an age below 52 years. This limitation was a turning point in the conception of this type of retirement, and was doubtlessly established in accordance with EU policies promoting the extension of working life beyond the ordinary retirement age, which in Spain remained fixed at the age of 65.

In any case, the above-mentioned Law 40/2007 (article 3.3) introduced as well a legal limitation on the use of coefficients to reduce the retirement age and to access the retirement pension, which at least in the case of partial retirement is certainly questionable. In effect, that law specified that reduction coefficients shall not be taken into consideration when proving the age required to qualify for partial retirement. In practice, this legal provision meant that pilots and co-

[21] 45th Additional Disposition incorporated to the GSSL by virtue of the 2nd Additional Disposition of Law 40/2007.

[22] Alzaga Ruiz, I., 'La jubilación a edad reducida', in AA.VV., *La reforma de las pensiones*, Ediciones Laborum, Murcia, 2011, p. 407.

[23] BOE, No. 269, of 10 November 1995, the text of which has been amended in recent years.

[24] Maldonado Molina, J. A.: 'La jubilación a edades reducidas…', *op. cit.*, p. 221.

[25] It is important, however, to underline the existence of a specific case in which a minimum age had already been set prior to the passing of the above-mentioned Law 40/2007, and that was the case of seafarers, who for years have not been allowed to retire before the age of 55.

pilots were not entitled to partial retirement at the ordinary retirement age if this age is reduced.[26] However, it remains unclear why a retired person over 65 years is entitled to partial retirement, while a worker who applies for early retirement for doing a hazardous, toxic, unhealthy or arduous work is not. For instance, the current IX Collective Agreement between Iberia Airlines and its pilots,[27] far from acknowledging the possibility of partial retirement to pilots aged 60 and older, recognizes instead that of remaining in active flying service by reducing their activity by 45% until they turn 65—with a proportional reduction of their retribution, so that the pilot is actually working part-time—, a situation that has nothing to do with partial retirement.[28]

Finally, it should be added that, among its novelties, this significant piece of labour legislation included a consideration[29] according to which the establishment of reduction coefficients shall 'entail the necessary adjustments in the worker's contribution to guarantee financial balance'. As it has been sometimes pointed out, this provision is 'an elusive euphemism for a more than probable increase of the amount of the social security contribution'. In any case, it underlines the fact that this regime is expected to be financially sustainable,[30] an issue on which we will insist when we comment on the 2021 reform of the social security system concerning this matter.

The reform of the GSSL promoted by Law 40/2007 was significant, and not the least so was its regulatory development through Royal Decree 1698/2011, of 18 November, regulating the legal arrangements and general procedure for setting reduction coefficients and lowering the retirement age in the social security system. This Royal Decree brought into effect the provision of the law (45th Additional Disposition) that established, by way of regulation, 'the general procedure to reduce the retirement age, providing for the conduct of studies

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[26] It is important to take into account as well that article 166.2 a) of the GSSL, regulating partial retirement for workers aged 61 or older, expressly forbids taking into consideration 'the anticipation of the retirement age that may apply to those concerned'. Likewise, article 166.1 of the GSSL specifies that partial retirement from age 65 onwards may occur when 'the requirements that qualify for a retirement pension are met'.

[27] Annex 2. Published on BOE, No. 128, of 27 May 2004, pp. 40071 ff.

[28] As pointed out by López Cumbre, L., 'La posibilidad de adelantar la jubilación tras la reforma de 2011', *Temas Laborales*, No. 112, 2011, p. 178, 'if partial retirement is possible for those who have attained ordinary retirement age [65 years], it should also be possible for those who are older, even if their age is below the general one', i.e., for those under a reduced retirement age regime.

[29] 2nd Additional Disposition of Law 40/2007, incorporating the 45th Additional Disposition to the GSSL.

[30] García-Perrote Escartín, I., 'La reforma de las pensiones en la Ley 40/2007, de medidas en materia de Seguridad Social', in AA.VV., *La Seguridad Social en el siglo XXI*, V Congreso Nacional de la Asociación Española de Salud y Seguridad Social, Laborum, Murcia, 2008, p. 21.

on the statistics of accidents at work in each sector, as well as on the arduousness, hazardousness and toxicity of the working conditions, their impact on the workers' incapacity for work, and the physical requirements for the performance of the activity'.

The regulatory norm is relevant, as well as for establishing the above-mentioned general procedure, because it consolidates the approach introduced by Law 40/2007 in the GSSL in relation to the subsidiary consideration of retirement at a lower age as a formula to address situations in which workers are exposed to exceptionally arduous, toxic, hazardous or unhealthy conditions and suffer high rates of morbidity and mortality. As indicated in the preamble to the Royal Decree, 'the implementation of new coefficients shall be a proxy measure, because the workers' health shall take precedence and impose a modification in their working conditions'. The issue here is that the groups benefitted by the reduction coefficients do not seem to have significantly changed their perception of ordinary retirement at a lower age after the legislator's change of approach to it.

Without claiming to be exhaustive, a good example of the above is the already mentioned IX Collective Agreement between Iberia Airlines and its pilots. Article 140 in this agreement regulates the 'age at separation of flight services'.[31] This conventional provision and the appendix that completes it—Annex 2—consider the issue from a point of view that has remained almost unchanged over the years—see also the VII Collective Agreement of 22 April 2009,[32] or the VIII Collective Agreement of 4 April 2014,[33] which address the issue in the same terms—and can be summarized as follows:

a) At 55 years of age, the pilot may voluntarily demand to enter a situation of 'special rescission'—a kind of special unpaid leave—until the age of 65, which means that from that moment onwards the pilot shall stop working as such. In that case, the agreement (Annex 2.2) will acknowledge the pilot's right to receive from the company an amount equivalent to 100% of their retirement pension 'which they would have received from the social security system had they been 65 years or more'. This amount shall be subject to periodic revaluation by the social security system, as pensions are. In addition, a pilot in unpaid leave may subscribe a special agreement with the social security system, 'according to which the worker's contribution will be paid monthly by the company in the amount in effect at that time'. In case the pilot dies at 60 or

[31] Published on BOE, No. 217, of 7 September 2018, pp. 87498 ff.

[32] Published on BOE, No. 113, of 9 May 2009, pp. 40052 ff, which came into effect on 1 January 2015.

[33] Published on BOE, No. 128, of 27 May 2014, pp. 40071 ff.

more years, the monthly payment to which the deceased pilot would have been entitled shall be paid to their widow or widower, or, failing this, their children, until the moment in which they would have turned 65.

b) In addition to the above-described situation, the collective agreement establishes that a pilot who has attained 60 years and has not applied to a 'special rescission' shall necessarily enter a 'reserve status' in the conditions specified in Annex 2 of the collective agreement (article 140, paragraph 4), with the age limit set again at 65 (Annex 2.1). For this purpose, the Annex describes the three alternatives offered to the worker, whose decision should, in principle, be accepted by the company: 1) to remain in active service full time; ii) to remain in active service 50% of the time, with the corresponding proportional reduction of their salary, while the contribution of both parties to the Social Flight Fund and the Mutual Fund remain the same, as if the pilot were flying full time; iii) to enter the 'reserve status', a legal situation that is also made available to pilots who, having definitely lost their capacity to fly, are 55 years old or more, and apply to it. From that moment onwards, the pilot shall receive fourteen monthly payments, the amount of which will be established by the collective agreement, and shall remain affiliated to the social security system, while the company will have the right to use 'the services of the crewperson for specific counselling tasks and collaborations on the ground'. However, those professionals shall not 'under any circumstances, be allowed to occupy commanding positions in their corresponding organic unit'. In any case, the collective agreement establishes that, when a pilot aged 60 or more 'suffers psychophysical alterations that affect compliance with the conditions and requirements of their job (loss of licence), they shall automatically enter the reserve status'.

After analysing the above-mentioned agreement, it is easy to conclude that the logic behind it contradicts the one assumed by the legislator in recent years. Even if it is ultimately the pilot's decision when to separate themselves from service—insofar as their flight licence is still in effect—, the truth is that relocating the worker is considered a residual option, while modifying the working conditions to adapt them to the pilot's personal situation so that they can maintain the same job is only possible by reducing their activity by 50%. No additional consideration is made. Nevertheless, as pointed out at the beginning of this analysis, Spanish legislation forbids pilots aged 60 or more to

fly unless they are part of a multi-pilot crew in which they are the only pilot having attained that age.[34]

Royal Decree 1698/2011 not only defines, as reflected in the title, the regime and general procedure to establish reduction coefficients and lower the retirement age. It also considers and facilitates changing the already existing reduction coefficients and the minimum ages to qualify for retirement. Even though, in principle, the regulatory norm excludes its application 'to workers performing an activity for which another norm has already acknowledged the use of coefficients to reduce the retirement age or, when applicable, its anticipation' (article 1), the regulation indicates that this shall be so 'without prejudice to the provisions of the first additional disposition'. To this effect, the norm establishes that 'in cases where production processes are modified in a way that substantially alters the working conditions of a specific activity or sector, in the scale, category or specialty in relation to which the reduction coefficients or anticipation of the age of retirement are established, they may be subject to change, while respecting the situation of the workers who have developed that specific activity prior to the date in which that change becomes effective' (1st Additional Disposition, second paragraph).[35]

Two considerations can be made in relation to the group of pilots and co-pilots. First of all, according to the above-mentioned disposition, it will be possible to implement the reduced retirement age regime of those workers in the future providing that the production processes are modified so much as to 'substantially' alter their working conditions. However, and despite the generic nature of the terms used, the truth is that this legal option has never translated into a reform of the regime applied to pilots and co-pilots in these cases.

Secondly, the regulatory norm respects the expectations generated among those who have developed their professional activity within the framework of a specific reduced retirement age regime. The problem is that the legal formula is unclear, because what does it mean that the modification will be done 'respecting the workers' situation'? Focusing on the case discussed in this work, that of pilots and co-pilots, we understand that the norm acknowledges, under a hypothetical modification to the reduction coefficients for this group of workers, the right of the workers to have the currently in effect 0.40 coefficient applied to the time of activity before the coming into force of such modification, while to the period following that change the new reduction

[34] Article 6.3 of Royal Decree 270/2000, of 25 February (BOE, No. 64, of 15 March 2000, amended several times).

[35] The future modification of the reduction coefficients or the minimum age to qualify for a retirement pension is also considered in the Royal Decree in the case of groups for which those coefficients and minimum age are established according to the procedure regulated in the above-mentioned norm. See article 9.

coefficient will be applied. This logic is also behind section 5 of article 206 of the GSSL, redrafted during the reform carried out at the end of 2021.[36]
Despite the fact that Royal Decree 1698/2011 opened the door to a change in the ordinary retirement at a lower age regime of pilots and co-pilots, we cannot but highlight that this legal reform has never taken place. Therefore, the regime established in 1986 is the one still in force regardless of all technological advances in aviation, an industry that in the last thirty-five years has evolved from analogic avionics to essentially digital avionics.

3.2. The Reform of the Social Security System at the end of 2021: No News is Good News?

So far, we have seen that the reduced retirement age regime has not changed significantly in the last thirty-five years, even if the reform of the social security system undertaken in 2007 intended to update the legal treatment of this legal specialty. If anything has changed at all, it is the context where this particular legal regime unfolds, because in recent years such phenomena as the progressive increase of the retirement age or the penalization of early retirement have transformed retirement at a lower age into a particularly interesting option for certain groups of workers. In this sense, this is a legal option that, in principle, does not penalize retirement before reaching the ordinary retirement age in effect at that moment.[37] Hence the significant increase in the number of groups claiming for the implementation of the procedure established by Royal Decree 1698/2011. These claims have been mostly unsuccessful because the list of groups benefitting from the procedure has hardly been extended in the last years, mostly incorporating law enforcement agencies.[38] In this sense, the Government's caution when it comes

[36] In particular, this section establishes that: 'The reviewing of the reduction coefficients used to lower the retirement age shall not affect the situation of workers who, prior to it, have carried out their activity for as much time as required to qualify for retirement'.
[37] It should also be taken into account that, ever since 2008, Spanish regulation demands attaining the corresponding age with no possibility of lowering it so that groups as the one here discussed can access other retirement options, such as partial retirement (Maldonado Molina, J. A., 'Las jubilaciones anticipadas y por edad reducida en la Ley 21/2021, de 28 de diciembre', *Revista de Trabajo y Seguridad Social. CEF*, No. 467 (January-March), 2022, p. 28.
[38] In the case of local police forces, the retirement age reduction procedure regulated by Royal Decree 1698/2011 was applied. However, the Policía Foral de Navarra (Regional Police of Navarra) and the Mossos d'Esquadra (Regional Police of Catalonia) were both granted an age reduction regardless of that procedure, as set by the General State Budget Law for 2022.
In contrast with groups granted access to ordinary retirement at a lower age—three since the passing of the 2011 Royal Decree—, it is possible to count up to twenty-three groups that, in the last few years, have unsuccessfully demanded to be granted that same legal treatment.

to extending that list, together with the complexity of the procedure to acknowledge this right to new groups, have certainly had much to do with the discrete evolution of this legal option.[39]

The reform of the social security system approved at the end of 2021 was a good opportunity to reform the current status quo.[40] However, as suggested by the title of the present section, little new can be said from the point of view that seemed to be imposing itself on our legal system through the regulatory development undertaken for the first time in 2007. After all, section 3 of article 206 of the GSSL, in the consolidated text, continues to reflect the same legal logic: 'The establishment of coefficients to reduce the retirement age shall only be applied when modifying the working conditions proves to be impossible'.

In fact, the novelties are concentrated in three very specific spheres: a) the revised text of article 206 of the GSSL, which seems to relinquish the possibility of setting a fixed age from which certain workers would be able to retire—as mentioned before, this is the legal technique used in the case of disabled workers—, and confirms the use of reduction coefficients as the legal mechanism to be applied, as has been for pilots and co-pilots since 1986; b) the 2nd Additional Disposition of Law 21/2021, which recommends the Government the development, within the terms agreed with the most representative labour unions and business organizations, of the regulatory framework of the failed Royal Decree 1698/2011, thus highlighting the need to reform a regime—in particular, the procedure to grant access to this type of retirement to certain groups—that, as pointed out before, has not been effective in acknowledging the entitlement of those groups to retirement at a lower age or in updating, as in the case of pilots and co-pilots, the conditions under which retirement may be accessed; c) finally, the new 206.5 section of

From a historical perspective, it should be kept in mind that the lowering of the retirement age on grounds of performance of specific professional activities in Spain is a legal assumption linked to the constitution of some special social security regimes (on this issue, see Barceló Fernández, J., 'Los coeficientes reductores en la edad de jubilación por razón de actividad. Del derecho al privilegio', in AA.VV., *Por una pensión de jubilación, adecuada, segura y sostenible*, III Congreso Internacional y XVI Congreso Nacional de la Asociación Española de Salud y Seguridad Social, Tomo I, Laborum, Murcia, 2019, p. 180 ff.).

[39] As pointed out by several authors—among them, Maldonado Molina, J. A., 'Las jubilaciones anticipadas y por edad reducida en la Ley 21/2021, de 28 de diciembre', *op. cit.*, p. 30—, the result of years of applying the general procedure for the establishment of reduction coefficients to lower the retirement age is frustrating, because the procedure is far too complicated and has proved to be almost unviable, for it requires the performance of previous studies on the statistics of accidents at work in the corresponding sector, as well as the intervention of various social and institutional actors.

[40] Law 21/2021, of 28 December, guaranteeing the purchase capacity of pensions and other measures to reinforce the financial and social sustainability of the public pension system (BOE, No. 312, of 29 December 2021).

the GSSL, which establishes that the coefficients to reduce the retirement age 'shall be reviewed every ten years, according to the procedure determined by the regulation'. This last aspect is the most interesting one for pilots and co-pilots.

As pointed out before, section 5 of article 206 of the GSSL somehow responds to 'the effects that the new technologies may have on the arduous or hazardous nature of an activity, which can determine changes in the production systems leading to a reduction of efforts or risks in consonance with the philosophy that promotes prevention over reparation, adapting the work to the person, and preventing, therefore, arduous work from appearing to be an unalterable situation during a person's working life', the fatigue caused by it compensated with the lowering of the retirement age.[41] We believe that this picture is particularly accurate in the case of pilots and co-pilots, especially because it puts the focus on an issue that, in our opinion, has not been sufficiently valued, which is the impact that digital technology has on the work of these professionals. In other words, it can hardly be argued that the technological evolution of passenger air transport services in recent years has affected the way and conditions in which these professionals carry out their work. And yet, the message behind the fact that the retirement regime applicable to pilots and co-pilots has not been modified in the last thirty-five years seems to be exactly the opposite.

The last novelty contained in Law 21/2021 refers to the contribution required to, in our case, pilots and co-pilots who wish to have access to this particular type of retirement, and represents a significant shift in the perception of it. With regard to this, it is important to remember that Recommendation No. 12 of the Toledo Pact, in the 2020 version, underlines 'the need to improve the regulatory framework to favour the identification of these groups, so that the function of protecting those whose health suffers and/or see their life expectancy reduced under such negative circumstances is fulfilled'.[42] However, Law 21/2021 has been criticized[43] for introducing one section in article 206 of the GSSL that literally establishes the following: 'In order to maintain the financial equilibrium of the system, the application of reduction coefficients

[41] Maldonado Molina, J. A., 'Las jubilaciones anticipadas y por edad reducida en la Ley 21/2021, de 28 de diciembre', *op. cit.*, p. 34.

[42] It is important to remember that the well-known Toledo Pact is a political agreement approved by the Spanish Parliament in 1995 and subsequently monitored by a parliamentary commission. It set out the guidelines for the future legislative reforms of the social security systems. Its latest version, dating from 27 October 2020, may be consulted in: https://www.congreso.es/public_oficiales/L14/CONG/BOCG/D/BOCG-14-D-175.PDF

[43] Cano Galán, Y., 'La reforma de las pensiones: el nuevo marco legal de la jubilación', *Revista Aranzadi Doctrinal*, No. 3 (March), 2022, p. 14.

shall entail an increase in the contribution to the social security system that shall vary according to the group, sector and activity specified in the corresponding norm, in the terms and conditions also established therein. This increase shall consist of an additional contribution applied to the basic contribution that covers common eventualities provided by both the company and the worker'.

Suddenly, the need to ensure the financial equilibrium of the social security system and the sustainability of the pension system come to the fore. The norm suggests that, in the medium term, the legislator may increase the contribution required, in our case, from pilots and co-pilots as well as from the airlines, in order to financially balance the realization of a legal possibility that has been acknowledged as a right in our country for decades. The challenge that currently characterizes the social security system is felt again in this case: 'to find a retirement model that, while responding to the financial needs of the system, is appealing to the worker'.[44]

In any case, as the reader will probably have observed, the actual implementation of the reduced retirement age regime is again postponed—pending a later regulatory development that should be agreed upon by the most representative business organizations and labour unions. Pilots and co-pilots will, for now, continue to be subject to a regime that is already familiar to them given its inalterability over the years.

4. The Extension of Working Life: Reflections on the Most Recent Case Law of the Court of Justice of the European Union and its Consequences from the Point of View of Antidiscrimination Protection

The extension of the working life of pilots and co-pilots is also an interesting issue to discuss from the point of view of Directive 2000/78/EC, particularly in view of the jurisprudence of the Court of Justice of the European Union (hereinafter, CJEU) in the last few years. In fact, the three judgements analysed below are a very interesting corpus of jurisprudence in what regards the matter here studied, because it somehow responds to the most common cases affecting this professional activity.

First of all, the judgements delivered in the Prigge (2011)[45] and Fries (2017)[46] cases address issues related to the forced retirement of pilots working in

[44] Ortiz de Solorzano Aurusa, C., 'Las recomendaciones del Pacto de Toledo sobre la edad de jubilación en un sistema abierto y flexible de acceso a la pensión', in Hierro, F. J. (dir. and coord.), *Perspectivas jurídicas y económicas del 'Informe de Evaluación y Reforma del Pacto de Toledo' 2020*, Thomson Reuters Aranzadi, Madrid, 2021, p. 554.

[45] Judgement of the Court of Justice of the European Union (Grand Chamber) of 13 September 2011 (Reinhard Prigge and others v. Deutsche Lufthansa AG, C-477/09).

passenger airlines.[47] Secondly, the judgement in the Cafaro (2019)[48] case delves into the legal problem of forced retirement among pilots who work for airlines specialized in providing services to national intelligence agencies, in this case the Italian secret services, and are therefore very much linked to the sphere of national security. Finally, the judgements given in the Prigge (2011) and Cafaro (2019) cases share a particular connection, insofar as the latter relies on the former to draw a totally opposite conclusion, basically because the pilots' professional development was completely different in the two cases, as was the legal treatment of the aviation regulatory field.

In the judgement delivered in the Prigge case (2011), the CJEU concluded that setting the age of 60 years as a limit on the exercise of the pilot's activity cannot be considered a necessary measure in terms of public safety and healthcare, in the sense described in section 5 of article 2 of Directive 2000/78/EC. The reason for which it is not acceptable to forbid the pilots to perform their activity after they have attained the age of 60 years is basically that this measure may be regarded as disproportionate in the sense indicated in section 1 of article 4 of Directive 2000/78/EC. Annex I, point FCL.065 of the Regulation (EU) No. 1178/2011, establishing that pilots aged 60 or more can only command aircraft engaged in commercial air transport operations as members of a multi-pilot crew and providing they are the only crew member having attained that age may be included among the less drastic, though limiting, measures.

Years later, the judgement in the Fries case (2017) estimated that, according to Annex I point FCL.065 of Regulation (EU) No. 1178/2011, pilots working for commercial airlines and having reached the age of 65 years could not be denied the possibility of commanding 'empty flights' or 'transfer flights' in which neither passengers, nor cargo, nor mail were carried, or of acting as instructors and/or examiners on board aircraft without being a crew member. This was of course an interesting contribution, given the existing legal restrictions to the extension of the working life of those professionals. From this perspective, the doctrine of the Prigge case (2011) can also be considered a valuable

[46] Judgement of the Court of Justice of the European Union (First Chamber) of 5 July 2017 (Werner Fries v. Lufthansa CityLine GmbH, C-190/16).

[47] For the judgement of the Fries case, see a specific comment from the perspective of extending the working life of pilots in Elorza Guerrero, F., 'Sobre la capacidad de los pilotos que hayan cumplido los sesenta y cinco años para realizar "vuelos en vacío" o "vuelos de traslado", así como ejercer actividades de instructor y/o examinador a bordo de una aeronave', *Revista de Derecho del Transporte*, 2017, No. 20, p. 225 ff.

[48] Judgement of the Court of Justice of the European Union (First Chamber) of 7 November 2019 (Gennaro Cafaro v. DQ, C-396/18).

contribution insofar as it prevented the possibility of collective agreements forcing the early retirement of pilots aged 65 or more.

As regards the judgement in the Cafaro case (2019), it delved into a new dimension in aviation, connected to activities developed in the sphere of national security, on which there are no specific provisions in International Law—basically, ICAO standards— or in EU Law limiting pilot licences and, therefore, the pilots' capacity to carry out their activity on the grounds of age. As it has been graphically pointed out, 'the age limit is of course not 65, as in commercial aviation',[49] although the judgement pointed out that the states have a very broad margin of discretion, precisely because of the lack of actual legal criteria at the international or EU level. In any case, the judgement referred to the action and criterion of the national legal bodies—acknowledging therefore the existence of legal protection even in cases linked to national security, which is usually a fairly vague sphere—, which, based on the requirements of the corresponding activity, will decide whether age may affect the pilots' professional performance or not.[50]

Oddly enough, the Spanish Constitutional Court (Judgement 22/1981), after analysing the 5th Additional Disposition of Law 8/1980 (forced retirement) from a constitutional perspective, dismissed the presumption of a person's ineptitude because of their age. However, EU jurisprudence shows that, whatever the nuances, there is indeed a presumption that pilots become unfit to perform certain activities as part of their service after they reach certain age. In fact, comparing the judgements of the Prigge (2011) and the Cafaro (2019) cases has led some renowned specialists to argue that 'it is doubtful that the physical conditions required from pilots commanding "state flights" or flights related to the national security of a state—which is not the same thing—,

[49] Casas Baamonde, M. E. and Ángel Quiroga, M.., 'Supuesta discriminación por razón de edad: jubilación forzosa de pilotos de aeronaves a los 60 años', *op. cit.*, p 13.

[50] This solution has led, for instance, Rojo Torrecilla, E., 'UE. Pilotos de aeronaves y extinción forzosa de la relación laboral al cumplir los 60 años. ¿Discriminación por razón de edad o protección de la seguridad nacional?. Notas a la sentencia del TJUE de 7 de noviembre de 2019 (asunto C-396/18)', in http://www.eduardorojotorrecilla.es/2019/11/ue-pilotos-de-aeronaves-y-extincion.html, to qualify the this approach to this case as 'oscillating jurisprudence', in the sense that it accepts the possibility of terminating the pilot's contract after they attain a certain age, given the specific conditions of their activity, and at the same time refers to the national legal body as the one responsible to solve the case and ponder whether age affects the worker's performance. The issue is that, as pointed out by Sanguineti Raymond, W., 'La edad: ¿cenicienta de las discriminaciones?', *op. cit.*, p. 15, at least in the case of Spain, 'the exact scope of the strict canon that needs to be applied for the assessment of the constitutionality of differences in treatment on the grounds of age having an impact on labour relations is still to be defined', and this theoretical construction is obviously necessary to elaborate a coherent doctrine on the matter. Meanwhile, the courts just do their best every time they have to judge one of these cases.

should not, in what concerns the prevention of human failure, be the same as those demanded from pilots commanding commercial flights, on whose expertise and excellent physical conditions depends the safety of so many people'.[51] The same observation can be made in relation to the Fries case (2017), because it is important to keep in mind that the so-called 'empty flights' or 'transfer flights' will frequently share the airspace with commercial flights carrying passengers and may, therefore, be the origin of potential air accidents. For this reason and despite being a doctrine that favours the extension of the pilots' working life, the diverging consideration of age is not fully understandable.[52] Ultimately, the existing jurisprudence may be thought to express what has been called 'acceptance of the game of presumptions—topical associations that eventually become apparently undisputable normative truths'—,[53] which at the end of the day leads to the consolidation of contradictory situations as the ones described herein.

Years ago, Rodríguez-Sañudo started his analysis on the termination of labour relations on the grounds of age by making an indisputable assertion: 'A worker's age is, as is well known, a circumstance that modifies their ability to act'.[54] And he finished his work by saying that addressing this issue within the sphere of positive law requires taking into consideration 'not only the legal problems associated with the extinction of the relation itself, but first and foremost the situation of the retired worker in its double—social and economic— dimension'.[55] It is undeniable that the doctrine around the retirement of pilots contradicts the EU policy on the extension of working life.[56] Far from accepting this state of affairs as unchangeable, we understand that it is time to provide effective solutions to this unsatisfactory situation, as evidenced by the successive legal conflicts that periodically reach not only the CJEU, but also the national courts.[57] All in all, technological advances in the

[51] Casas Baamonde, M. E. and Ángel Quiroga, M., 'Supuesta discriminación por razón de edad: jubilación forzosa de pilotos de aeronaves a los 60 años', *op. cit.*, p. 12.

[52] Elorza Guerrero, F., 'Sobre la capacidad de los pilotos que hayan cumplido los sesenta y cinco años para realizar "vuelos en vacío" o "vuelos de traslado", así como ejercer actividades de instructor y/o examinador a bordo de una aeronave', *op. cit.*, pp. 236–237.

[53] Fita Ortega, F., 'Non-discrimination of older workers in the Spanish and the European Union context', *Labos: Revista de Derecho del Trabajo y Protección Social*, No. 1, 2020, p. 87.

[54] Rodríguez-Sañudo Gutiérrez, F., 'La extinción de la relación laboral por edad del trabajador', *Revista de Política Social,* 1973, No. 97, p. 23.

[55] Rodríguez-Sañudo Gutiérrez, F.: 'La extinción de la relación laboral por edad del trabajador', *op. cit.*, p. 67.

[56] See Casas Baamonde, M. E. and Ángel Quiroga, M., 'Supuesta discriminación por razón de edad: jubilación forzosa de pilotos de aeronaves a los 60 años', *op. cit.*, p. 12.

[57] As an invitation to reflect on this and despite the assertion of the Supreme Court that pilots and air traffic controllers are subject to totally differentiated regimes, we would like to

field of aviation—the automatic pilot is possibly the most obvious one—should favour the extension of the pilots' working life, provided they wish to extend it and are personally fit for it.

5. Final Reflections

Following the call for papers for this monograph issue, we were invited to reflect on the discriminatory practices resulting from the use of technology, and on how labour and antidiscrimination legislation can protect workers from them. In the previous pages, we have tried to describe the paradox associated with the technological evolution of commercial aviation and the legal regime that regulates the right of airline pilots and co-pilots to either retire before the ordinary retirement age because of the arduous nature of their profession, or to extend their working life after they attain 60 or, in certain cases, 65 years of age. Although in the last seventy years the evolution of aeronautical technology has been undeniable, the legal restrictions to exercise that right, which are justified in terms of aviation safety, continue to act as an immovable retaining wall that complicates both the early retirement of pilots and co-pilots and the possibility of extending their working life. From the perspective of article 6 of Directive 2000/78/EC, it is important to be aware that age is addressed in deliberately ambiguous terms when it comes to justifying differences of treatment. Consequently, a more concrete and precise regulation is not to be expected in the medium term, especially considering how in recent years the CJEU has interpreted the Directive and, more specifically, article 6 of it. The

comment on the way a law suit concerning the forced retirement of an air traffic controller has recently been solved. Judgement of the Supreme Court No. 164/2020, of 21 February, supported the decision of the company ENAIRE to forcefully retire one worker, by virtue of the 4th Additional Disposition of Law 9/2020, of 14 April, regulating the provision of air traffic services, which established the obligations of civil providers of such services in addition to setting certain working conditions for civil air traffic controllers. The judgement underlined that 'the constitutional doctrine indicates that it is unquestionable that certain activities demand from the worker some physical or intellectual conditions that tend to decline over time. Therefore, it seems reasonable to presume that a person's capacities will have diminished at a certain age and, on that basis, establish the termination of a labour relation'. However, in this specific case, the air traffic controller had occupied and expected to continue occupying a non-operational post, the requirements for which—and, consequently, its arduousness—were not necessarily the same as those demanded to work in the air traffic control tower. In the same line, the Supreme Court issued two judgements on 18 February 2020 (No. 150/2020 and No. 151/2020). All three judgements shared the same doctrine and evidenced the significant litigiousness around this issue. Their severity, however, clashes with the controllers' will, a situation that illuminates that of pilots and co-pilots.

court's position has been oscillating,[58] to say the least, and has often reflected a relaxation of the requirements that any measure or practice meant to define the exceptions to the application of the fundamental right to no discrimination based on age should meet, especially when the purpose is to fight against indirect discrimination. This contemplative attitude of not only the CJEU but also the Spanish Supreme Court,[59] observed, for instance, whenever they address the possibly discriminatory nature of forced retirement,[60] has led more than one jurist to rightly estimate that, even if the prohibition of age discrimination is considered a fundamental right in the European Union, this type of discrimination has become the 'Cinderella' of discriminations in the current legal practice, because the level of protection provided against is much lower than for other discriminations, which are not subject to so many exceptions.[61] This is hardly surprising, considering that the legal doctrine has for some time now denounced the existence of some sort of hierarchy of discriminations established by the EU, where gender discrimination is granted the maximum protection and age discrimination receives the minimum. This is evidenced by the unequal treatment that the Directive admits in the case of age, which complicates the identification of indirect discrimination situations, but also of direct ones, 'thus totally undermining the intense protection granted to this type of discrimination in the legal doctrine applied to gender'.[62] This view, reflected in EU legislation, has been transferred to the CJEU jurisprudence, as well as to the action of Spanish courts. Consequently, certain sectors have discussed the convenience of applying the parameters used to

[58] Together with judgements that rigorously deal with the issue, such as the one delivered in the Mangold case (2005), there are others that do not address unequal treatment as affecting the principle of non-discrimination, but as a question related to the typical dynamics of the labour market. This is the case of the judgements given in the Palacios Villa (2007), Rosenbladt (2010) and Abercombie (2017) cases.

[59] Nevertheless, certain sectors of the legal doctrine have rightly argued that, while EU regulation on age discrimination has had a clear impact on Spanish legislation and jurisprudence, the influence of EU jurisprudence has been uneven (see Manerio Vázquez, Y., 'La aplicación de la Directiva 2000/78/EC por el Tribunal de Justicia: avances recientes en la lucha contra la discriminación', *Nueva Revista Española de Derecho del Trabajo*, 2016, No. 191, pp. 146 ff.).

[60] See judgements 280/2006 and 341/2006 of the Spanish Supreme Court; also, judgement 66/2015 of the Constitutional Court.

[61] Sanguineti Raymond, W., 'La edad: ¿cenicienta de las discriminaciones?', *op. cit.*, p. 8.

[62] Ballester Pastor, A., 'Género y edad: los dos extremos del principio antidiscriminatorio comunitario', in AA.VV., *La relevancia de la edad en la relación laboral y de Seguridad Social*, Aranzadi Thomson Reuters, Madrid, 2009, p. 35.

address unequal treatment on grounds of sex to unequal treatment on grounds of age.[63]

In any case, until the Directive is reformed to bring the protection against age discrimination closer to that which is granted to gender discrimination, or a change of attitude occurs in the courts in relation to the criteria that are used to detect the existence of age discrimination, both direct and indirect, we believe it is reasonable to ask what else can be done. We can start by saying that, as scientific research has shown more than once, 'age is a highly individualized phenomenon, which depends to a large extent on each person',[64] and, consequently, the physical and cognitive decline that may happen with age is unlikely to be identical for all people, although it is obvious that the passing of time implies a progressive deterioration of a person's faculties, regardless of the pace at which it happens.

Focusing on the situation of pilots and co-pilots, we will start by referring to the legal treatment given so far to ordinary retirement at a lower age in our country. We believe this regime, which is ultimately protected by the provisions of article 6.2 of Directive 2000/78/EC—establishing that the setting by the different states of a specific age at which professionals registered under certain social security regimes are entitled to retire cannot be considered discriminatory—was interestingly and accurately reformulated during the 2007 reform of the social security system. As pointed out before, that reform consolidated the idea that the use of reduction coefficients, when applicable, is an appropriate procedure only when arduous working conditions cannot be modified. In fact, the preamble to Royal Decree 1698/2011 underlined that the procedure to establish reduction coefficients described in the regulatory norm was originally intended, as a result of the studies required prior to the establishment of those coefficients, to induce 'an improvement of the working conditions'. However, in no way did this reform modify the regime in what concerns the reduction coefficients applicable to pilots and co-pilots. It is true that article 1 of Royal Decree 1698/2011 specified that 'workers performing an activity for which another norm has already acknowledged the use of coefficients to reduce the retirement age' are excluded from the provisions of this regulatory norm. Thus, the scheme applied to pilots and co-pilots remained unaffected. But it is also true that the norm stated that groups for

[63] See, for instance, Fita Ortega, F., 'Non-discrimination of older workers in the Spanish and the European Union context', *op. cit.*, p. 87. In this sense, this jurist echoes the proposition made by González Ortega, S., 'La discriminación por razón de edad', *Temas Laborales*, 2001, núm. 59, pp. 112 -113, who raised the question of the convenience of applying the parameters used to address differences in treatment based on sex to differences in treatment based on age to avoid unwanted effects.

[64] Sanguineti Raymond, W., 'La edad: ¿cenicienta de las discriminaciones?', *op. cit.*, p. 2.

which reduction coefficients had already been established are entitled to request that they be modified through the procedure described in the 2011 norm.

As mentioned before, nothing of this has happened. In this sense, the social security reform approved at the end of 2021, the effective development of which has been postponed for an indefinite period of time, is a new opportunity to bring research on the impact that the work environment and the activity of flying aircraft have on pilots and co-pilots up to date. In fact, we understand that article 206.5 of the GSSL, according to which reduction coefficients shall be revised every ten years through the procedure determined by the regulation, is especially interesting, because in the medium term it should lead to the periodical updating of the studies on the impact that the activity of aviation has on pilots and co-pilots and on whether, for instance, technological evolution justifies the continued use of 0.40 as the reduction coefficient.

As regards the extension of pilots' working life, and regardless of the legislation that, in Spain, promotes the active retirement of workers, it seems clear that, as long as the ICAO does not modify its position in relation to the age at which pilots should retire, EU legislation will not open up to other considerations, especially when the CJEU—remember the doctrine established in the judgement of the Prigge case—has incorporated, without discussion, the norm that this international organization established through its JAR-FCL 1. In any case, we hope that the decision on whether or not a pilot is fit to fly at 65 years of age or more will someday be an individual one, based on a personalized assessment. All in all, the assessment procedure already exists and pilots need to undergo periodic controls to determine whether they can keep their licence. It would be easy to repeat those controls for pilots who are considering the possibility of flying beyond the age of 65.

In our opinion, the conventional treatment given to Iberia pilots of advanced age—between 55 and 65 years old—leaves much to be desired in the sense of allowing the possibility of extending their working life. As mentioned before, the collective agreement of this airline with its pilots grants them the possibility of entering a reserve status. But this only a prerogative of the firm, not the right of the workers, and only for the purpose of the pilot performing counselling tasks and collaborations on the ground, dismissing the fact that the CJEU judgement in the Fries case (2017) admitted that pilots, not only aged 55 to 65, but also over 65, can command 'empty flights' or 'transfer flights' and work as instructors or examiners on board aircraft. In this sense, we believe there is room for the development of relocation policies to permit the pilots who wish it to continue their activity in accordance with the companies' needs and for as long as their psychophysical aptitudes allow it. Milestones such as

flying accident No. 1549 of US Airways (2009), which was considered by the National Transportation Safety Board (NTSB) of the United States as 'the most successful water landing in the history of aviation', have taught as that sometimes experience can be decisive when it comes to facing very difficult situations in flight that technology cannot solve on its own, at least for now.[65] As acknowledged by the CJEU in its judgement delivered in the Fries case (2017), 'the competence of these specialists [the pilots] remains one of the principal guarantees of the reliability and safety of civil aviation'.

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[65] On that occasion, commander Chesley B. Sullenberger, who was about to retire, saved the life of all passengers on board the Airbus A320 that landed in the Hudson River, outside New York.

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Caste Discrimination in Employment and Enhancing Protections Available under the Equality Act

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Abstract

The UK government has the evidence of minorities of South Asian origin who suffer from victimisation in employment based on caste. The intra racial prejudices within the Asian community have been exposed in recent years by the 'outcastes' or the 'untouchables'(Dalits), who have suffered employment discrimination because their rights have been abused. The evidence that caste hatred in based on socio economic variables in employment can be found in the cases that have come before the courts and there have been findings that there has been victimisation against those who belong to the lowest castes. There is a need to evaluate the provisions of the Equality Act 2010 and the power available under section 69 of the Enterprise Regulatory and Reform Act 2013 to raise caste as a basis for discrimination in the courts. The obstacles in the enforcement of the Equality Act are in the positive duty which is difficult to implement for the employer in recruiting staff and causes difficulties of interpretation. This paper argues that the scope of legislation should be extended to take into consideration ICERD definition of racial discrimination and a wider ambit of protection should be available tin employment contracts in which caste is included to provide a remedy when discrimination is in industry.

Keywords: *Caste prejudice; Racial Discrimination; Equality Act; Positive Duty.*

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1. Introduction

The appearance of caste-based discrimination in the communities of the Indian subcontinent has surfaced in the UK's labour market where people of lower caste have been employed in an occupation. There is an insidious form of discriminatory behaviour that victimises the employees through denying labour rights and by expressing direct and indirect discrimination on the work premises. Its likely manifestation is in employment contracts where the employer is born into a higher caste of the Hindu religion and the employee from the lowest caste. It is necessary to evaluate if the Equality Act 2010 has the framework to redress this problem, and if not, the amendments that may be possible by legislation that conforms to the international definition of racial discrimination.

The Hindu religion is stratified by a caste system the highest rung of which is occupied by the Brahmins and at lowest tier are the Dalits or the "untouchables" who are deemed to be outside the hierarchy of the faith. [1] They are not accorded the same rights extended to other castes in the religious pyramid.[2] In the UK the discrimination against the lower castes has been exposed by litigation in the courts and this has brought the issue in the spotlight and the cases in the labour discrimination have invoked the Equality Act. [3]

[1] The substantive and underlying principle of the caste system is Varna Dharma or in essence the division of labour. Marc Galanter argues that " the abolition of slavery at the middle of 19th century extended discriminatory rights to many untouchables " including the untouchables who had access to the courts at least "formally". The legal system was not organised to deal with "graded inequality" the overall British approach towards caste was a "policy of interference". This was effected by the courts by the granting "injunctions to restrain member of particular castes from entering temples even ones that were publicly supported and dedicated to the entire Hindu community". There were damages awarded for "purificatory ceremonies necessitated by the pollution caused by the presence of the lower castes; such pollution was actionable as a trespass on the person of the higher caste worshippers" . Marc Galanter, Untouchability and the Law, Economic and Political Weekly, Vol 4, No 12, 1969, pp 131-133.

[2] Dr B.R. Ambedkar, one of the framers of the Indian Constitution who was from the Dalit background defined caste as [a] "an enclosed class and endogamy is the only characteristic of caste' (2002) 'Castes in India: Their Mechanism, Genesis and Development', in V. Rodigrues (ed.), The Essential Writings of B.R. Ambedkar, New Delhi: Oxford University Press. (1916) 241-62.

[3] The Equality Act 2010 section 9(5) states that 'A Minister of the Crown:
(a) must by order amend this section so as to provide for caste to be an aspect of race;
(b) may by order amend this Act so as to provide for an exception to a provision of this Act to apply, or not to apply, to caste or to apply, or not to apply, to caste in specified circumstances.

The Equality Act, Section 9, defines caste as a

> hereditary, endogamous (marrying within group) community associated with a traditional occupation and ranked accordingly on a perceived scale of ritual purity. It is generally (but not exclusively) associated with South Asia, particularly India, and its diaspora. It can encompass the four classes (varnas) of Hindu tradition (the Brahmin, Kshatriya, Vaishya and Shudra communities); the thousands of regional Hindu, Sikh, Christian, Muslim or other religious groups known as jatis; and groups amongst South Asian Muslims called biradaris. Some jatis regarded as below the varna hierarchy (once termed "untouchable") are known as Dalit. [4]

The Equality Act sets down nine protected characteristics and only race or religious belief contend as possible legal basis for caste discrimination. [5] This Act does have a provision for a minister who "must by order amend this section so as to provide for caste to be an aspect of race" under the legislation.[6] The protection against discrimination based on caste in English law has to satisfy a very narrow criteria and the Enterprise and Regulatory Reform Act 2013 section 69 has defined this legislative protection in employment law against caste discrimination by allowing the litigant to raise caste within an existing head or characteristic.

There is an international dimension to the issue of caste discrimination that makes the issue of global impact. The International Convention against Racial Discrimination (CERD) 1966, Article 1 has formulated the legal obligations of states to eliminate caste discrimination and defines

> the term 'racial discrimination' that shall mean any distinction, exclusion, restriction or preference based on race, colour, descent, or national or ethnic origin which has the purpose or effect of nullifying or impairing the recognition, enjoyment or exercise, on an equal footing, of human rights and

[4] The Equality Act 2010: caste discrimination briefing Paper Number 06862, 31 December 2014 www.parliament.uk/briefing-papers/SN06862.pdf.

[5] The Enterprise and Regulatory Reform Act 2013 converts the existing power in Clause 9(5)(a) of the Equality Act into "a duty to include caste as an aspect of race for the purposes of the Equality Act". Section 97 also provided that a Minister may carry out a review of the effect of the section 9(5) EA 2010 (and orders made under it) and whether it remains appropriate. If a review is carried out, it must be published. The review must not be carried out before the end of a period of five years, beginning with the day the ERRA was passed if a Minister considers it appropriate in the light of the outcome of the review, he may by order repeal or otherwise amend the provision on caste. Any such order must be made by statutory instrument and would be subject to the affirmative resolution procedure. HL Deb 24 April 2013 c1476.

[6] Section 9 of the Equality Act 2010 sets out the definition of Race to include: (a) colour; (b) nationality; (c) ethnic or national origins. www.legislation.gov.uk/ukpga/2010/15/section/9.

> fundamental freedoms in the political, economic, social, cultural or any other field of public life.[7]

The argument of this paper is that caste discrimination should be codified into law in English law and be deemed on the same level as racial discrimination that can lead to claims in unfair dismissal. It defines the obstacles in the Equality Act that arise in establishing a positive duty on employers to enact in practice and its application in industrial relations if caste discrimination was codified into law. There is reference to the current legal framework and how the victimisation by caste in employment could fill the void if it were made a protected characteristic in law. The overarching aim of the thesis is that the caste should be viewed as intersectional discrimination in employment law and that it should be included as falling within racial discrimination. This will serve to litigate on grounds of discrimination even when it is committed within the intra racial discrimination by the South Asian employers against persons of similar origins.

1. The International Definition of Race Discrimination

The discrimination in employment based on caste has to draw from the same principles under the race legislation which is now covered by the Equality Act, so that the liability can be fixed under the heads of antidiscrimination law. There have been cases that have invoked the public sector duty that conforms to equality and these have been dealt with under the jurisdiction of the Employment Appeal Tribunals (EAT). The EAT have considered the dismissal of the employees allegedly based on caste discrimination where the respondent employer has been accused of breaching the protected characteristic of racial discrimination. In *Naveed v Aslam*[8] the claimant was a South Asian chef who was of an Arian descent, who worked in a restaurant and upon dismissal from his employment he raised the issue that it was because of his caste that his employment was terminated. His claim was that he had been discriminated under the section 9 (1) the Equality Act based on the unlawful discrimination that consisted of deduction from his wages during the course of his employment. This was accompanied by the suggestion that the proprietors of the business were also members of the same caste but had elevated themselves

[7] International Convention on the Elimination of All Forms of Racial Discrimination. Adopted and opened for signature and ratification by General Assembly resolution 2106 (XX) of 21 December 1965 entry into force 4 January 1969, in accordance with Article 19. ohchr.org/en/professionalinterest/pages/cerd.aspx.

[8] (2012) EAT 1603968/2011.

in the caste hierarchy and victimised him in the course of employment. The EAT ruled that the respondents were not liable for the 'caste' based discrimination because

> Firstly, no order had been made extending the section 9 of the Act to provide for caste to be a concept of race and, secondly, it was quite impossible for the claimant's caste to fall under the existing definition of ethnic origins because of the Claimants clear acceptance that movement with the Arian caste is possible and that it was the Claimant's status within the same caste as the Arian brothers which he claims led to his treatment. [9]

This implied that the claimant was being treated differently because of his social class not his caste. The judge did not consider that the Claimant and the Respondents may have been of different sub- castes or jatis, and, therefore, of different status within the broader group or caste to which they were both affiliated. However, without the Equality Act and the discretionary 'caste power' which is present in s. 9(5)(a), and its amendment by ERRA 2013 s 97 to become a duty, caste might not have been pleaded as a ground of discrimination in this case. The principle is that the Equality Act has facilitated the litigation that has reached the jurisdiction of the Employment Appeal Tribunals when the issue has been raised of the employer treating the employee less favourably because of their caste. [10]

The judgments have impacted on the issue of caste discrimination that includes racial discrimination by reference to the Equality Act Section 9. In *Chandok and another v Tirkey,* [11] the claimant Ms Tirkey was employed as a domestic servant after being hired in India before the family's transfer to the UK. Her employers were aware that she was an Adivasi Christian, who historically have been outside the Hindu caste system but treated as being of the lowest caste similar in status to the Dalits. After her employment commenced she was forced to live separately in servants quarters and compelled to work in breach of the

[9] Para 27.

[10] In Begraj v Heer Manak Solicitors (2014) ICR 1020 16/12/14 the claimant Vijay, a practice manager, was Dalit who was dismissed in March 2010 and his wife Amardeep, a solicitor, was Jat a higher caste who resigned in January 2011. The couple claimed wrongful dismissal on grounds of caste discrimination and race and religious discrimination. Amardeep also claimed sex discrimination. They claimed that the firm's partners, who were of the same higher Jat caste as Amardeep, objected to their relationship and discouraged them from the inter caste marriage and their claim was that they were treated less favourably compared to both junior or equivalently qualified Jat staff who were not married or did not have a lower-caste partner. This case did not reach a conclusion because the tribunal recused itself on grounds of ostensible bias. Thus, what was deemed a "complex and novel matter" was not heard by the court.

[11] (2014) EAT/0190/14/KN.

Working Time Regulations, with only a single day of annual leave in her entire employment of four and a half years.

She claimed compensation to the amount of £175,000 in unpaid wages for the infringement of Section 9 (1) (c) of the EA 2010. Justice Langstaff ruled that the definition of race is not exclusive, but it "includes" ethnic origin and it could have been argued that the "caste" insofar as it was an aspect of "ethnic" origin was already included. The lack of a single definition of caste 'does not mean that a situation to which that label can, in one of its manifestations, be attached cannot and does not fall within the scope of "ethnic origins"'. [12]

His honour reflected on the international dimension of prejudice based on ethnic origins to rule that it was illegal under the protected characteristic of racial discrimination and stated: "Seven Treaties, Conventions and UN reports; nineteen authorities; and eleven other publications in an initial bundle of authorities, together with a further eleven authorities, two publications and three Hansard extracts in a supplementary bundle of authorities".[13]

However, Justice Langstaff ruled that his judgment was fact-specific and not all caste-based claims would come within the definition of 'ethnic origins'.[14] His honour found that "ethnic origins" was a wide and flexible phrase covering questions of descent his judgment was based on "this particular case, in its particular circumstances", and his role was not to "establish more general propositions".[15] Ms Tirkey succeeded in her claims for unfair dismissal, racial harassment and indirect religious discrimination and was awarded a substantial sum at a subsequent remedy hearing. The decision did not indicate, still less establish, that there is an existing legal remedy of caste-based discrimination but it has brought into the ambit of Section 9 (1) (c) in certain circumstances for caste to be part of ethnic or national origins.

The judge cited the previous case law in coming to his decision and in particular two cases on indirect racial discrimination that gave "a wide and flexible scope to the meaning of 'ethnic origins'." [16] In *Mandla v Dowell Lee* [17] there was an appeal to the House of Lords by a pupil belonging to the Sikh community who had asserted his right to wear a turban to school as part of his racial identity. The decision of their Lordships was based on the interpretation of the Race Relations Act 1976 section 1(1) (b) (i) and (ii) the issue was if the headmaster of a school in refusing to admit the boy unless he removed his turban in order to minimise religious distinctions was guilty of unlawful

[12] Para 45.
[13] Para 55.
[14] Para 55.
[15] Para 53-55.
[16] Para 42.
[17] [1983] 2AC 548.

discrimination. The defence was that under section 3 the boy was a member of a 'racial group . . . who can comply' with the rule did not need to show the rule to be 'justifiable irrespective of [the boy's] ethnic . . . origins'.

Lord Fraser held that "a distinct community had to have a long-shared history, of which the group was conscious as distinguishing it from other groups, and the memory of which it kept alive, and second it had to have a cultural tradition of its own, including family and social customs and manners, often but not necessarily associated with religious observance.[18]

The Sikhs were deemed to be a racial group defined by reference to 'ethnic origins' even though they were not racially distinguishable from other people living in the Punjab. It was not material to the case that the racial and religious minority came under definition of race because it was the overriding characteristic of the ethnic group. This was reviewed again in a later case which also concerned victimisation of a distinct category that included race and religion.

In "*Jewish Free School Case" - R(E) v Governing Body of JFS and Another* [19] a Jewish school boy had been excluded from a school exclusively for the Jewish school children because their ancestral line was not all Jewish on the side of their maternal parentage. The case reached the House of Lords where it was ruled that there had been discrimination "on racial grounds" (defined by section 3 of the Act that included the "ethnic origins"). Lord Phillips held that "the critical question is whether the requirements of Jewish identity as defined by the 1976 Act met the characteristics that define those who have them by reference to " colour, race, nationality, or ethnic or national origins?".[20]

Lord Hope held that the crucial question was not whether the person was a member of a separate ethnic group from those advantaged by the school's admissions policy, but whether he had been treated differently on grounds of ethnicity. His Lordship recognised the right of the Office of the Chief Rabbi (OCR) to define Jewish identity in the way it does as a matter of Jewish religious law but "to say [its] ground was a racial one is to confuse the effect of the treatment with the ground itself".[21]

Judge Lonstaff considered these cases in his ruling leading to the "same principle" of ethnic origins and racial identity as the circumstances in Tirkey. [22] This ruling brings UK law more proximate to the ICERD 's definition of racial discrimination [23] and affirms that it can define a national group such as the

[18] p 1066.
[19] [2010] 2 AC 728, SC.
[20] Para 27.
[21] Para 201.
[22] Para 52.
[23] ICERD, Supra 8.

lower caste hierarchy.[24] This form of victimisation can be brought into the framework of public law by extending the forms of liability that are part of victimisation with aggravated characteristics. The desired step would be to augment the present legislation by addressing the caste discrimination as part of racial prejudice expressly within the provisions of the Equality Act.

2. Equality Act and the Employers' Obligations

The effectiveness of the current legislation to protect against caste discrimination in employment has to be set against provisions of the Equality Act that places a duty on the employer to recruit employees with regard to any protected characteristics. Section 149(1) of the EA 2010 and it requires public bodies, when exercising their functions, to "have due regard to the need to: (a) eliminate discrimination, harassment, victimisation and any other conduct that is prohibited by or under this Act; (b) advance equality of opportunity between persons who share a relevant protected characteristic and persons who do not share it; (c) foster good relations between persons who share a relevant protected characteristic and persons who do not share it".[25]

This Public Sector Equality Duty (PSED)is augmented by powers of the Secretary of State in England, and the Welsh Ministers in Wales, who can impose different specific duties on relevant authorities (those specified in Parts 1 and 2 of Schedule 19 to the Equality Act 2010) by way of separate regulations.[26] The Public authorities must prepare and publish (in a manner that is reasonably accessible to the public) one or more specific and measurable objectives they think they should achieve in pursuance of one or more aims of the general equality duty.[27]

The general duty applies to all public authorities listed in Schedule 19 to the Equality Act 2010, [28] and to other organisations when they are carrying out public functions. There are limited exceptions relating to certain functions, such as immigration (in relation to race, religion, age and the advancement of

[24] The term 'national origin' was defined in Ealing Borough Council v Race Relations Board (1972) 1 All ER 105 as "national only in the sense of race not nationality or citizenship". Lord Simon at 352.

[25] Public Sector Equality Duty, Equality and Human Rights Commission. https://www.equalityhumanrights.com/en/advice-and-guidance/public-sector-equality-duty.

[26] s.153(1) and (2) Equality Act 2010.

[27] Equality Act 2010 (Specific Duties and Public Authorities) Regulations 2017 SI 2017/253; before 31 March 2017, Equality Act 2010 (Specific Duties) Regulations 2011 SI 2011/2260.

[28] As amended by Equality Act 2010 (Public Authorities and Consequential and Supplementary Amendments) Order 2011 SI 2011/1060, and by Equality Act 2010 (Specification of Relevant Welsh Order 2011 SI 2011/1063 (W.154).

equality) and judicial functions.[29] The PSED applies to age, disability, race (this includes colour, nationality, and ethnic or national origins), religion or belief, sexual orientation, pregnancy and maternity, gender and gender reassignment.[30]
The UK Government has carried out a Consultation and input from a study by the Economic and Social Research Council (ESRC)/ University of Wolverhampton has evaluated the possibility of extending the public sector duty to prevent caste discrimination. They have focussed on the provisions in the Equality Act that present hurdles when applied to caste discrimination. [31]
The joint research project in 2013-15 considered caste and they identified two provisions in particular which might be relevant in excluding protection to caste discrimination. These are Schedule 3 to the Equality Act 2010 as amended by the Equality Act 2010 (Age Exceptions) Order 2010 and the Schedule 5 of the Equality Act 2010 which relates to the public sector equality duty and positive action as problematic if applied to caste. [32]
The findings state that a Ministerial Order under Section 9 (1) of EPRA which implements the caste duty can include exceptions for caste, or make particular provisions of the Equality Act apply in relation to caste in some but not in other circumstances. [33] The advantage of the public sector equality duty specifically extended to caste, rather than ethnic origins as at present would be to that public bodies would need specifically to consider the need to eliminate caste discrimination. [34]
However, one particular risk of caste legislation would be further entrenching caste-identity would arise if personal, caste-related, information was requested from applicants. While the Government is emphatic that there is no reason why employees or service recipients should be required or encouraged to disclose their caste it found in the Review of the Duty many examples of public authorities seeking and using diversity data in ways which seemed excessive and in some cases inappropriate. The exclusion of caste from the scope of the PSE D would discourage authorities from seeking information to enable them to take caste into account in making decisions and would guard against public authorities requesting this information for that purpose. [35]

[29] Sch. 18 to Equality Act 2010.
[30] Sec 149(7).
[31] Caste in Great Britain and Equality Act: A Public Consultation: Government Equalities Office, March 2017, https://www.gov.uk/government/consultations/caste-in-great-britain-and-equality-law-a-public-consulation.
[32] Para 3.21.
[33] Page 15.
[34] Ibid.
[35] Page 16.

The findings noted that in deference to caste there appears to be consensus that the retention of data on caste would not be of benefit. [36] The PSED could be disapplied to caste if the courts decide in accordance with EA's Explanatory Notes definition and it would exclude it as aspect of ethnic origins. Therefore, caste discrimination not related to descent could be covered by the law in enforcing the PSED. The report also deals with specific provisions about taking "positive action" for instance where someone such as an employer "reasonably thinks" that people with a particular characteristic ie, disability have a disadvantage because they are disproportionately under-represented in a job or a training opportunity or other activity.[37]

In such circumstances, the employer may be able to take positive action to address the under-representation, by assisting people who share that characteristic. The race protection is one of the characteristics covered by positive action, and, the inclusion of caste as an aspect of race would mean that caste would also be covered. However, this might be relevant where an employer with a substantial workforce of South Asian ethnic origin knew or suspected that employees of a particular caste background were being relegated for management development opportunities. [38]The ability to take positive action might create similar drawbacks to those stated in the PSED because for an employer to "reasonably think" that there was a problem of the kind mentioned, they would probably need evidence about what caste his or her employees were. This will not if routinely enquired be either helpful or proportionate.[39]

The UK Government's response to the Consultation Paper from those within industrial relations and perceived discrimination in employment opportunity. [40] Their argument reflects on the nature of social status, and the possibility of social mobility, within the caste system. The issue they raise is that the systematic disadvantage suffered by certain castes may not be related to ethnicity but to perceived social status. The Employment Lawyers Association have provided their feedback to the Government Consultation by making the following observation:

[36]Ibid p 16-17.
[37] Ibid p 17.
[38] Ibid.
[39] Ibid.
[40] Caste in Great Britain and equality law: A Public Consultation analysis report for the Government Equalities Office, July 2018, Nigel Lloyd, NHL Partnership Ltd https://www.gov.uk/government/consultations/caste-in-great-britain-and-equality-law -a-public-consulation.

> Social function as a distinct feature of caste would not easily fall within the definition of ethnic origin whether this is based on occupation or wider economic position – if a respondent were to argue that discrimination is based on someone's occupation or socio-economic standing (more akin to class than caste) this may evade the scope of 'ethnic' origins… [41]

This is based on the assumption that there is a risk in considering whether or not to take positive action or whether the public sector equality duty applies, an employer may consider that the best way to establish the necessary data would be to establish an applicant's caste, but the Government does not support people being asked such potentially intrusive and socially divisive questions.[42]

The law at present is that the legislation does not set out the steps a public authority should take to meet the requirements of the general equality duty, but states that complying with the duty might mean treating some people more favourably than others, where doing so is allowed by the Equality Act The principles from case law developed under the previous equality duties will continue to apply, and guidance has been issued.[43] In R (on the application of (1) Rajput (2) Shamji) v Waltham Forest LBC: R (on the application of Tiller) v East Sussex CC the Court of Appeal approved the guidance set out in R (on the application of Brown) v Secretary of State for Work and Pensions [2008][44] that in complying with the PSED there are six principles, known as the "Brown Principles" as follows:

> decision-makers must be made aware of their duty to have due regard to the identified needs; the duty must be fulfilled both before and during consideration of a particular policy, and involves a "conscious approach and state of mind";[45] it is not a question of ticking boxes, the duty must be approached in substance, with rigour and with an open mind, and a failure to refer expressly to the duty whilst exercising a public function will not be determinative of whether due regard has been had; the duty is non-delegable; the duty is continuing; it is good practice for an authority to keep a record showing that it has considered the identified needs.[46]

The approach of the UK government has been defined by the Public Consultation where it reached the conclusion that "the best way to provide the necessary protection against unlawful discrimination because of caste is by

[41] Caste in Great Britain and equality law, supra 41 Para 2.12.
[42] Caste in Great Britain and equality law.
[43] [2011] EWCA Civ 1577.
[44] [2008] EWHC 3158 (Admin).
[45] para 91.
[46] paras 89-96.

relying on emerging case-law as developed by courts and tribunals". [47] This it feels is a more "proportionate approach given the extremely low numbers of cases involved" and because of the "controversial nature of introducing 'caste', as a self-standing element, into British domestic law". [48]

3. Racial Discrimination and Equal Protection

The current state of English law in dealing with caste discrimination is premised on racial discrimination and the lack of a legal umbrella does not reflect the support for legislation to ban caste hatred in the House of Lords.[49] The government has minimised the impact of caste hatred or the urgent need for enacting legislation by stating that there is insufficient litigation on the matter. However, the inability of the PSED under the Equality Act to provide the basis for caste to be challenged by those who consider being victimised needs further consideration under the international standards and treaties.

The English legal framework has to take note of the stipulations of the International Convention for the Elimination of Racial Discrimination (ICERD) that has defined caste prejudice or hatred based on birth right or "descent" within the broad definition of 'racial discrimination.[50] While there is no specific discrimination based on caste the ICERD Committee has recommended the inclusion of a prohibition against caste discrimination and analogous systems of inherited status in domestic legislation.[51] This requires an understanding of the theory of caste hatred as a public order offence against the Dalit population in the UK. In its General Recommendation XXIX the

[47] This was implied in a debate in the House of Lord when Baroness Williams of Trafford, the Parliamentary Under-Secretary of State for Communities and Local Government stated that the UK Government was 'currently unaware of any cases of race discrimination with an alleged caste element coming before the courts since the Langstaff ruling (re: Chandhok & Anor v Tirkey) was delivered". (Caste based discrimination,11 July 2016 Vol 774, https://hansard.parliament.uk/Lords/2016-07- 11/debates/3EEC4BE4-C98F-4155-82E2-E8485A752C94/Caste-BasedDiscrimination.

[48] Conclusions, Public Consultations.

[49] Caste based discrimination. Hansard, Vol 774: debated on Monday 11 July 2016. https://hansard.parliament.uk/lords/2016-07-11/debates/3EEC4BE4-C98F-4155-82E2-E8485A752C94/Caste-BasedDiscrimination

[50] Article 1 "In this Convention, the term "racial discrimination" shall mean any distinction, exclusion, restriction or preference based on race, colour, descent, or national or ethnic origin which has the purpose or effect of nullifying or impairing the recognition, enjoyment or exercise, on an equal footing, of human rights and fundamental freedoms in the political, economic, social, cultural or any other field of public life". www.ohchr.org/EN/Professionalinterest/Pages/CERD.aspx.

[51] Concluding observations (CERD/C/63/CO/11 para. 25) and its General Recommendation 29 (2002) on descent.

ICERD Committee states that discrimination "against members of communities based on forms of social stratification such as caste and analogous systems which nullify or impair their equal enjoyment of human rights" is void. This extends the definition of race victimisation in the communities to be recognised, "including inability to alter inherited status, socially enforced restrictions on outside marriage, and dehumanising discourses". [52]

There has been increasing tendency in the UN frameworks to issue various documents that declare discrimination based on descent illegal. The UN General Assembly has identified caste discrimination as continuing to affect diaspora communities 'whose original cultures and traditions include aspects of inherited social exclusion'.[53] This relates to intermarriage between castes, commensality (i.e. the act or practice of eating/drinking together), access to places of worship, employment conditions, discrimination in access to political participation, and the role of the media. [54]

The UN Special Rapporteur on Contemporary forms of Racism and the UN Sub Commission on the Promotion and Protection of Human Rights have taken note of the existence of discrimination on the basis of caste and termed it as a issue of fundamental rights in the countries where there are members of South Asian communities.[55] In his annual report to the Human Rights Council in June 2011 the UN Special Rapporteur on Contemporary forms of Racism recommended the UK government enact specific legislation to outlaw direct and indirect discrimination against affected groups in accordance with the general measures contained in ICERD General Recommendation XXIX. [56]

There has been incorporation in other Commonwealth countries of the ICERD framework for outlawing caste discrimination. In Australia the Racial

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[52] At the Sixty-first session (2002) General recommendation XXIX on article 1, paragraph 1, of the Convention (Descent), The Committee on the Elimination of Racial Discrimination stated "Recalling the terms of the Universal Declaration of Human Rights according to which all human beings are born free and equal in dignity and rights and are entitled to the rights and freedoms therein without distinction of any kind, including race, colour, sex, language, religion, social origin, birth or other status ". http:www.ohcr.org/EN/HR Bodies/CERD/Pages/CERDindex.aspx.

[53] UN Doc.E/CN4/Sub2/2004/31para35.

[54] E/CN.4/Sub.2/2004/31.

[55] The Commission on Human Rights, taking note of resolution 2004/17 of 12 August 2004 of the Sub-Commission on the Promotion and Protection of Human Rights, decided to take this step, on the basis of the three working papers submitted to the Sub-Commission on this topic (E/CN.4/Sub.2/2001/16, E/CN.4/Sub.2/2003/24 and E/CN.4/Sub.2/2004/31), the comments made during the sessions of the Sub-Commission and national human rights institutions, relevant organs and agencies of the United Nations system and NGOs on the basis of information circulated by the Special Rapporteurs.

[56] A/HRC/8/25/Add.1.

Discrimination Act (RDA) 1975 it has been adopted into domestic legislation. Article 9(1) states:

> It is unlawful for a person to do any act involving a distinction, exclusion, restriction or preference based on race, colour, descent or national or ethnic origin which has the purpose or effect of nullifying or impairing the recognition, enjoyment or exercise, on an equal footing, of any human right or fundamental freedom in the political, economic, social, cultural or any other field of public life.[57]

Section 10 of the RDA provides the rights to equality granted under ICERD Article 5

> which extends by subsection (i) to the Commonwealth or of a State or Territory, for persons of a particular race, colour or national or ethnic origin who do not enjoy a right that is enjoyed by persons of another race, colour or national or ethnic origin, or is "more limited extent than persons of another race, colour or national or ethnic origin, then, notwithstanding anything in that law, persons of the first-mentioned race, colour or national or ethnic origin shall, by force of this section, enjoy that right to the same extent as persons of that other race, colour or national or ethnic origin.[58]

The Canadian Constitution Act 1982 extends its protection to caste discrimination and includes it in Part 1 of the so- called *Canadian Charter of Rights and Freedoms* which "guarantees the rights and freedoms set out in it subject only to such reasonable limits prescribed by law as can be demonstrably justified in a free and democratic society".[59] These are included in section 15 which contains a non-exhaustive list under "Equality Rights" that in subsection (i) corresponds to 'Equality before and under law and equal protection and benefit of law'. [60]
The section defines "Every individual is equal before and under the law and has the right to the equal protection and equal benefit of the law without

[57] RDA 1975 (as amended) 2013. https://www.legislation.gov.au/details/C2014COOO14.
[58] The State of Queensland Anti-Discrimination Act 1991 defines race as including "colour and descent or ancestry [italics added], and ethnicity or ethnic origin, and nationality or national origin". https://www.humanrights.gov.au/federal-discrimination-law-chapter-3-race-discrimination-ac.
[59] Justice and Law, Government of Canada. http://laws-lois.justice.gc.ca/eng/Const/page-15.html.
[60] In contrast to the UK, section 15 of the Constitution Act 1982 also known as the Canadian Charter of Rights and Freedoms contains a non-exhaustive list of grounds; see G. Moon, 'From equal treatment to appropriate treatment: what lessons can Canadian equality law on dignity and on reasonable accommodation teach the United Kingdom?' 6 European Human Rights Law Review (2006) 695-721, 697.

discrimination and, in particular, without discrimination based on race, national or ethnic origin, colour, religion, sex, age or mental or physical disability". Section 15 (2) includes a provision in subsection (1) for 'Affirmative action programs' which "does not preclude any law, program or activity that has as its object the amelioration of conditions of disadvantaged individuals or groups including those that are disadvantaged because of race, national or ethnic origin, colour, religion, sex, age or mental or physical disability".

The province of Ontario, which comprises the National Capital Region the legislature has introduced a Human Rights Code in 2015, Section 11, that expressly states that federal statutes and its own legislation forbids discrimination from "religion or creed based prejudice". It sets out a duty to " accommodate creed beliefs and practices " and "prohibits discrimination that results from requirements, qualifications or factors that may appear neutral but have an adverse effect on people identified". This is interpreted as "constructive" or "adverse effect" discrimination which is protected under the HR *Code* unless the requirement, qualification or factor is reasonable and *bona fide* in the circumstances, and cannot be accommodated short of undue hardship".[61]

There is a legal duty on employers, service providers, unions and housing providers to accommodate people's beliefs and practices not to cause undue hardship. This implies those adversely affected by a standard, rule or requirement of the organisation that is sincerely (honestly) held are protected in law. The "creed" protections are contingent on a person's belief to be "sincerely held" and it does not need for them to show that "their belief is an essential or obligatory element of their creed, or that it is recognised by others of the same creed (including religious officials)".[62]

However, unlike Australia and Canada, the UK adopts a 'grounds-based' approach to discrimination law, meaning that legislation affords protection from discrimination on specified grounds only. In English law the unlawful discrimination is regulated under the Equality Act that sets out Section 9 protected characteristics under its Schedule. This leads to the demands for the existing categories to be interpreted, so as to include forms of discrimination which are not expressly covered such as caste based discrimination in employment law.

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[61] OHRC, 17/9/15 http://www.ohre.on.ca/en/policy-preventing-discrimination-based-creed.

[62] In *Syndicat Northcrest v. Amselem*, [2004] 2 S.C.R. 551 the principle was established that it need only establish that an asserted creed belief is "in good faith, neither fictitious nor capricious, and that it is not an artifice" and "organisations may also sometimes need to evaluate objective evidence to decide whether a belief is in fact connected to a creed, or that a requirement, rule or practice actually negatively affects a person based on their creed". at para. 52.

4. Intersectional Discrimination and Legal Protection

The non-discrimination law in the UK, presently, suffers from the difficulties where litigants often raise several forms of linear discrimination.[63] The finding of an appropriate comparator has posed a major difficulty in cases before the courts in evaluating the direct or indirect discrimination. [64] This can be brought into the framework of the law by extending the remit of intersectional discrimination by extending the adjudication net into several forms of liability that can be a set of accumulated characteristics.

Bell argues that each protected characteristic needs to be defined separately. This is because the concept of 'ethnic group' suggests a uniformity of experience with all members assumed to share similar characteristics, and yet, " an individual 's ethnic origins will be combined with other personal characteristics such as gender, age, physical/mental abilities and sexual orientation". [65] An example is that a black person can face both racial and gender discrimination which would come under the umbrella term of "multiple discrimination". This can be compartmentalised into several strands to " the extent that different forms of discrimination operate concurrently then they may be described as additive discrimination". These can reflect in the barriers to promotion that cover two different characteristics such as gender and race but that there is a "more complex" concept of intersectional discrimination. [66]

This presupposes that there is a combination of different forms of inequality that results as "a distinct experience which can be attributed to a number of factors as inter sectionality which may rise to specific stereotypes such as the

[63] The United States offers a multi ground discrimination claims in practice are often separated into different components by the courts. Rosenburg, L, The limits of Employment Discrimination Law in the US and European Community. Copenhagen, DJOB Publishing, (1999) p 377, See also Moon, G ' Multiple Discrimination- Problems compounded or solutions found?' London, Justice, (2007) page 6.

[64] Unlike the European Court of Human Rights (ECtHR) the EU operates on the basis of a 'closed list of discrimination grounds' provided for in the treaties. For instance, TFEU, art 19 enables the EU to 'take appropriate action to combat discrimination based on sex, racial or ethnic origin, religion or belief, disability, age or sexual orientation'. Consolidated version of the Treaty on the Functioning of the European Union 2012, OJC 326/56.

[65] Martin Bell, Racism and Equality in the EU, Oxford University Press, (2008) Page 23

[66] S Hannett explains that "multiple discrimination" can occur in at least two ways. This is where the grounds of discrimination are additive (or double) in nature, and/or where the discrimination is based on an indivisible combination of two or more social characteristics. This denotes situations where an individual suffers cumulatively from (different) discriminatory practices to which the two or more different groups he or she belongs to are susceptible, with statistics being key in determining such discrimination". Equality at the Intersection: the legislative and judicial failure to tackle multiple discrimination (2003, 23 Oxford Journal of Legal Studies, p,83.

assumption that women wearing a headscarf lack self-confidence or that young Muslim men face a security risk" .[67] This form of intersectional discrimination presents a growing body of evidence which indicates heightened levels of disadvantages for those vulnerable to multiple forms of victimisation. [68] The contention is based on legislating on intersectionality by adopting a policy-based approach that extends the racist discrimination to caste in the legal framework.

Bell contends that "there are some grounds which are very difficult to disentangle from 'race' and ethnicity and differences in treatment due to nationality, religion and language are often interlinked with discrimination on grounds of ethnic origins". [69] In applying ground-based discrimination in "many instances direct discrimination on these grounds will constitute indirect discrimination on grounds of ethnic origins". The proximity between issues "such as nationality, religion, language and ethnicity there is a strong argument in favour of a comprehensive response in law and policy". The "EU Directives applying to these forms of discrimination provide a first step in enabling multiple discrimination to be addressed". [70] The intersectional discrimination is not possible to prevent by means of a closed list but the development of legal principles may bring the current head of racial discrimination to include caste in its umbrella. This approach gives rise to the issue, firstly, which grounds are regulated and how they are to be defined and extended. Although there is no generic reason why legal protection from discrimination is organised on the basis of categories, it is logical that such a model will give rise to demands for the list to be expanded by legislation, or for existing categories to be interpreted broadly as forms of discrimination not accepted by current laws. Solanke has observed that categorisation "is 'not preordained' but 'may have been inevitable given the nature of political campaigns for discrimination law". This means that "in some cases the addition of categories has been in response to the obligation to implement EU anti-discrimination law" as in the EA. The concept of caste as a statutory protected characteristic is self declaratory as a statutory division of an existing characteristic, the legal protection against caste discrimination is predicated on proving in the courts that caste is present in the existing characteristic within race or religion or belief system.[71]

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[67] European Commission, Tackling Multiple denomination -practices, policies and laws. Luxembourg: OOPEC, 2007, Page 17.

[68] This argument is supported by S Friedman in ' Double trouble: Cumulative discrimination and EU law (2005) 2 European Anti Discrimination Law Review, 13.

[69] Bell, Ibid p 18.

[70] Ibid.

[71] I. Solanke, 'Putting Race and Gender Together: A New Approach to Intersectionality', 72(5) Modern Law Review (2009) 723-749, 723.

The retention of a closed list means that direct discrimination could not be challenged in the courts by means of a racial category including caste. It could be prevented by a justification defence based on a Public Sector duty or the Positive Action because of the lack of protection in the current legislation. Moon has argued that lack of intersectional protection legislation " would have seriously damaging consequences in the continental European countries from East and West which are reluctant to acknowledge the existence of non discrimination law in the market place in its entirety". [72] Therefore, the legislative innovation that is required which states that unlawful discrimination includes discrimination based on an intersection of grounds that brings caste within race discrimination.[73]

The grounds for adopting intersectional discrimination in UK law would lead to the legal interpretation from a wider selection than that currently available in non -discrimination. In dealing with this perspective such an initiative would entail an acknowledgement that directives not providing multiple or intersectional discrimination do not apply in such cases. This would have negative effects on the development of any adequate response to intersectional discrimination by invoking a "teleological interpretation".[74] The desired step would be to legislate by addressing disadvantages that would acknowledge the accumulative heads of discrimination including caste in employment relations. It will then become recognized as a category of non discrimination law within race that would also have the potential to develop the concept further in the interpretation of racial discrimination in employment. The prism of intersectional discrimination will enforce the positive duty to override occupational necessity by finding a comparator that has restricted the application of discrimination law in the courts of the UK.

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[72] G Moon, Multiple Discrimination – Problems Compounded or Solved ... (2006) http://www.justice.org.uk/images/pdfs/multiplediscrimination.pdf at p 163.

[73] European Parliament Resolution 2013/2676 RSP (10 October 2013) on caste based discrimination refers to the International Convention on the Elimination of All Forms of Racial Discrimination (CERD) and General Recommendation XXIX of the Committee on the Elimination of Racial Discrimination in its preamble. Para 8 states " recognise caste as a distinct form of discrimination rooted in the social and/or religious context, which must be tackled together with other grounds of discrimination, i.e. ethnicity, race, descent, religion, gender and sexuality, in EU efforts to fight all forms of discrimination".
http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT%20TA%20P7-TA-2013-0420%200%20DOC%20XML%20V0//EN.

[74] European Union Non Discrimination law and Intersectionality: Investigating the Triangle of Racial, Gender and Disability Discrimination. Ashgate 2011 edited by Dr Dagmar Schiek and Professor Anna Lawson. Intersectionality in EU law. A Critical Re appraisal. Ashgate (2011) p 259-275 at Page 266.

5 Codifying Caste into Law

The Dalit based community organisation, Caste watch UK, has compiled evidence of discrimination such as "cases of elderly patients being refused care because 'upper caste' medical professionals will not touch them, or workers being side lined, or refused promotion, and school children being bullied for reasons of caste". It has proposed a law against caste discrimination that could be used to penalise these incidents as hate crimes. The primary reason for this is that the protection arises in the private relationships but in the consequences are observed in the public domain such as in "breakdowns in relationships and marriages, for example, where transgressing caste boundaries lead to emotional and sometimes physical abuse".[75]

The implication is that the discretionary 'caste power' in England for the Minister which was included in the Equality Act s. 9(5)(a), and its amendment by ERRA 2013 s 97 became a duty that has enabled caste to be pleaded as a ground of discrimination. [76] This is an inference that it should be made into a public order offence and that it has all the elements present such as intention and commission to be brought into the framework of criminal law and civil law. Dhanda, Warnapura, Keane argue that

[75] Ibid, See also Capturing Caste in Law: The Legal Regulation of Caste and Caste-Based Discrimination Thesis submitted in accordance with the requirements of the University of Liverpool for the degree of Doctor in Philosophy by Annapurna Deborah Waughray April. 2013https://livrepository.liverpool.ac.uk/12553/1/WaughrayAnn_Apr2013_12553.pdf

[76] Hepple, B, Equality: The new Legal Framework, (Oxford, Hart, 2011) p 12-26; Hepple notes the EA10 has three distinctive features. First, it is comprehensive, creating a unitary conception of equality and a single enforcement body, the Equality and Human Rights Commission. Second, it 'harmonises, clarifies and extends the concepts of discrimination (direct and in direct), harassment and victimisation and applies them across nine protected characteristics', specifically, age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex, and sexual orientation. Third, it transforms anti-discrimination protection into equality law although does not go as far as establishing a constitutional right to equality". For more on this concept of a structured approach to the use of dignity as the basis for equality law see J. Jowell, 'Is Equality a Constitutional Principle?' (1994) 47 Current Legal Problems; J. Stanton-Ife, 'Should Equality Be a Constitutional Principle?' (2000) 11 KCLJ 133 opposing Jowell's argument; J. Jones, '"Common Constitutional Traditions": Can the Meaning of Human Dignity under German Law Guide the European Court of Justice?' [2004] PL 167; E. Grant, 'Dignity and Equality' (2007) 7 Human Rights Law Review 299 46 This is a highly contested concept – see for example D. Beyleveld, R. Brownsword, 'Human Dignity, Human Rights, and Human Genetics' (1998) 61 MLR 661; D. Feldman, 'Human Dignity as a Legal Value' [1999] PL 682 and [2000] PL 61; C. McCrudden, 'Human Dignity and Judicial Interpretation of Human Rights' (2008) 19 EJIL 655 47; G. Moon, R. Allen, 'Dignity Discourse in Discrimination Law: A Better Route to Equality?' [2006] EHRLR 610.

> in Britain, caste is positively a form of association and social capital among communities of South Asian origin, but negatively a form of social separation, distinction and ranking. In predominant usage in Britain, caste is used interchangeably for varna, jati, and biradari. The most typical usage, though, is of caste as jati.[77]

Waughray, an advocate for outlawing caste victimisation proposes legislation to declare it as an offence in the UK law based on the Chindok case that she argues contributed significantly and acted as the catalyst for the surfacing of concealed of caste discrimination. It would be necessary to not repeal EA s. 9(5)(a) on the basis of this ruling. Instead, to augment the provision by means of subordinate legislation as framed by the Parliament in April 2013, to prescribe caste as an aspect of racial discrimination that offers a means of legal authority and establishes openly that discrimination on grounds of caste is not acceptable.[78]

The implication is that the discretionary 'caste power' for the Minister which was included in the Equality Act s. 9(5)(a), and its amendment by ERRA 2013 s 97 became a duty that has enabled caste to be pleaded as a ground of discrimination. [79] This is an inference that it should be made into a public order

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[77] Meena Dhanda, Annapurna Waughray, David Keane, David Mosse, Roger Green, and , Stephen Whittle, Caste in Britain: Socio-legal Review, Equality and Human Rights Commission Research Report 91 (2014).

[78] Annapurna Waughray, Ensuring protection against caste discrimination in Britain Should the Equality Act 2010 be extended?, International Journal of Discrimination and the Law July 11, 2016) Vol 16, Issue 2-3, 2016, p 177-196) In Capturing Caste in Law: Caste Discrimination and the Equality Act 2010 Waughray states that "successive governments have argued that caste could already be covered by race as currently defined in the EA by virtue of the descent aspect of ethnic origins; but as has been argued elsewhere, 'in order to construe caste as part of race in domestic law following the JFS route, a three-fold interpretive leap had to be made; caste must be viewed as part of descent, itself part of ethnic origins, which in turn is a sub-set of race". Human Rights Law Review Vol. 14(2) (2014) 359-379.

[79] Hepple, B, Equality: The new Legal Framework, (Oxford, Hart, 2011) p 12-26; Hepple notes the EA10 has three distinctive features. First, it is comprehensive, creating a unitary conception of equality and a single enforcement body, the Equality and Human Rights Commission. Second, it 'harmonises, clarifies and extends the concepts of discrimination (direct and in direct), harassment and victimisation and applies them across nine protected characteristics', specifically, age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex, and sexual orientation. Third, it transforms anti-discrimination protection into equality law although does not go as far as establishing a constitutional right to equality". For more on this concept of a structured approach to the use of dignity as the basis for equality law see J. Jowell, 'Is Equality a Constitutional Principle?' (1994) 47 Current Legal Problems; J. Stanton-Ife, 'Should Equality Be a Constitutional Principle?' (2000) 11 KCLJ 133 opposing Jowell's argument; J. Jones, '"Common Constitutional Traditions": Can the Meaning of Human Dignity under German Law Guide the European Court of Justice?' [2004] PL 167; E. Grant, 'Dignity and Equality'

offence and that it has all the elements present such as intention and commission to be brought into the framework of criminal law and civil law. Moreover, the courts have already established in *Mandla v Dowell Lee* and the Jewish Free Schools Case that a group can be defined as a racial category in indirect discrimination if its ethnicity has a special characteristic and this subsumes both religious and racial categories. The victimisation based on caste is likely to arise where the differentiation is in work relationships and in employment relations where the Dalit community will be discriminated against. This is because they have traditionally occupied occupations in the lower rungs of the hierarchy that gave them the title of 'untouchables'. [80]

The UK government should not be bound by considerations of its Public Consultation where it reached the conclusion that it will not be proportionate to enact a law that gives renewed emphasis to human dignity by protecting caste in addition to the five categories that include, at present, racial and religious discrimination, disability, homophobia, and old age. Instead, it should abide by the ICERD definition of racial discrimination that includes caste and proscribe it as a form of victimisation. This is by legislation to cover caste as a characteristic, because if racism is prohibited then so should the manifestation of speech or acts related to caste. The protection of victims of caste discrimination should be to ensure that the term caste appears on the face of the legislation as a self-standing, separate element of race in Section 9(5) of the Equality Act in addition to the aspects which are already included, i.e. (a) colour (b) nationality and (c) ethnic or national origins.

6. Conclusion

There is a need for caste discrimination to be terminated in employment contracts as it is a form of intra racial prejudice in South Asian communities that victimises the lower castes in industry when they are employed in the occupations. The current definition in the UK 's Equality Act does not conform to the ICERD definition of racial discrimination. The form of exclusionary and discriminatory behaviour which is prevalent in employment

(2007) 7 Human Rights Law Review 299 46 This is a highly contested concept – see for example D. Beyleveld, R. Brownsword, 'Human Dignity, Human Rights, and Human Genetics' (1998) 61 MLR 661; D. Feldman, 'Human Dignity as a Legal Value' [1999] PL 682 and [2000] PL 61; C. McCrudden, 'Human Dignity and Judicial Interpretation of Human Rights' (2008) 19 EJIL 655 47; G. Moon, R. Allen, 'Dignity Discourse in Discrimination Law: A Better Route to Equality?' [2006] EHRLR 610.

[80] Cleaning Human Waste, Manual "Scavenging", Caste and Discrimination in India. Human Rights Watch Report. 28/814, https://www.hrw.org/report/2014/08/25/cleaning-human-waste/manual-scavenging-caste-and-discrimination-india.

and is manifested in jobs by the wages paid, conditions of employment and human rights violations should be terminated. It is under Section 69 of the EPRA that the Minister can invoke the Equality Act and bring the infringement under racial discrimination but this is a discretionary exercise subject to the evaluation of each case. The law needs to be enacted that encompasses industrial relations and recognises intersectional discrimination which will increase the scope of the courts in the realm of equality legislation by declaring caste discrimination illegal. In other common law based countries where there are large minority communities of Indian origins the law has been enacted to cover discrimination and victimisation based on caste. This is unlike the grounds based discrimination that is currently enforced in the UK and which has limits in addressing discrimination. The existing basis for litigation in cases of discrimination in employment law has to override the burden of the PSED on the employer. This can be redressed if cumulative discrimination is recognised that will include a broad category of discriminatory behaviour which will increase the possibility of litigation based on caste. There should be a remedy available that conforms of the ICERD definition and the work contracts that victimise the Dalit community should be voided.

Comparing Flexible Working Hours in Northern and Southern Europe: A Methodological Analysis using Individual Survey Data

Sandro Giachi and Alberto Vallejo-Peña*

Abstract

Our study assesses whether a difference exists in the diffusion of flexible working hours between Northern and Southern European countries. We implemented a methodological approach based on individual workers' survey data, analysing a large sample from the European Working Conditions Survey (EWCS 2015) that includes 17 countries, and applying logistic regression models. We found that a worker in Northern Europe is twice as much likely to use flexible working hours than their Southern Europe counterpart, even after controlling for sociodemographic variables, working conditions, occupations, and sectors. Based on these findings, we argue in favour of the assumption that institutional regimes in Southern Europe feature lower levels of flexibility, putting forward some explanations for their perceived higher flexibility.

Keywords: *European Working Conditions Survey; Flexitime; European Countries; Working Day; Working Time.*

1. Introduction

Flexible Working Hours (FWHs) have diffused across Western societies in recent times, both in companies and their workforce, especially during the Covid-19 crisis, where environmental conditions and new restrictions

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facilitated the introduction of teleworking and flexible working arrangements.[1] Amongst the different solutions for work flexibility, there is evidence of higher levels of diffusion of FWHs in several Nordic or Western countries (e.g., Sweden, United Kingdom or Canada) and its positive relation with labour productivity[2].

FWHs became a priority issue in Europe, either because of decreasing competitiveness in comparison to other regions of the global economy – i.e., the United States and Southeast Asia – or the need for balancing the significant internal differences within the European continent, i.e. – Northern and Central Europe countries – that report greater economic stability and performance than Southern or Eastern European countries do[3].

The application of FWHs achieved interesting results in promoting work-family life balance, as well as in workers' perception of their welfare[4]. These factors also may have a positive impact on company performance, reduction of workers turnover and risk prevention, within the framework of corporate social responsibility where social and organisational issues are interrelated[5].

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1 E. Dagnino, '*Working Anytime, Anywhere' and Working Time Provisions. Insights from the Italian Regulation of Smart Working and the Right to Disconnect*'. E-Journal of International and Comparative Labour Studies, 2020, vol. 9, n. 3, 1-19.

2 C. Wallace, *'Work flexibility in eight European countries. A cross-national comparison'*, Czech Sociological Review, 2003, n. 21, 773-794.

A. Vallejo-Peña and S. Giachi, '*The Mediterranean variety of capitalism, flexibility of work schedules, and labour productivity in Southern Europe*', Region: the Journal of ERSA, 2018, vol. 5, n. 3, 21-38.

A. Carvalho Neto, *'Flexible working hour arrangements in Brazil'*, Revista Pensamento Contemporâneo em Administração, 2020, vol. 14, n. 2, 1-17.

3 G. Meardi, *'Mediterranean capitalism under EU pressure: labour market reforms in Spain and Italy, 2010–2012'*, Warsaw Forum of Economic Sociology, 2012, vol. 3, n. 5, 51-81.

S. Casagrande, and B. Dallago, *'Benchmarking institutional variety in the eurozone: An empirical investigation'*, Economic Systems, 2021, n. 45, 100838.

4 E. Kossek and L. Van Dyne, *'Face-time matters: A cross-level model of how work-life flexibility influences work performance of individuals and groups'* in K. Korabik (Ed.), Handbook of work-family integration. Academic Press, New York, 2008, 305-330.

J.R. Hayman, *'Flexible work arrangements: Exploring the linkages between perceived usability of flexible work schedules and work/life balance'*, Community, work & family, vol. 12, n.3, 327-338, 2009. C. Gordon, J.A. McMullin and T. Adams, *'Flexible small firms? Why some small firms facilitate the use of flexible workplace policies'*, Canadian Journal of Sociology/Cahiers Canadiens de Sociologie, vol. 40, n. 1, 1-24, 2015. doi: 10.29173/cjs19693

B. Beham, S. Drobnič, P. Präg, a. Baierl, and J. Eckner, *'Part-time work and gender inequality in Europe: a comparative analysis of satisfaction with work–life balance'*, European Societies, vol. 21, n. 3, 378-402. 2019.

5 P. Moen and Y. Yu, *'Effective work/life strategies: Working couples, work conditions, gender, and life quality'*, Social problems, 2000, vol. 47, n. 3, 291-326. doi: 10.2307/3097233

J. Hill, J.G. Grzywacz, S. Allen, V.L. Blanchard, C. Matz-Costa, S. Shulkin, S. and M. Pitt-Catsouphes, *'Defining and conceptualizing workplace flexibility'*, Community Work and Family, vol. 11, n. 2, 149-163, 2008. doi: 10.1080/13668800802024678

Considering these results, the adoption of flexible working arrangements seems to be a good strategy to achieve both organisational and workers benefits[6].
However, studies have criticised the impact of FWHs on working conditions. This has been particularly evident in the case of teleworking or working from home. In light of the rapid expansion of telework and the continuing evolution of ICTs, calls for caution and criticisms emerge from different academics.
From an organisational perspective, criticisms of telework focus on aspects such as: (1) difficulties in adjusting workspaces that were designed under the face-to-face model, in addition to the high costs of adapting to new trends in spatial and temporal flexibility; (2) loss of communication, cohesion and commitment of work teams as a consequence of increasing team fragmentation; and (3) increased staff turnover, as specific factors related to job satisfaction are diluted.[7]
From the perspective of workers, criticisms of the flexible working arrangements brought about by teleworking focus on: (1) the feeling of technological omnipresence and invasion of private space; (2) the emergence of new forms of work-life conflict associated with the invasion of these spaces; (3) the overburdening of women, as they bear more intensely such work-life balance problems; (4) the lack of technological capacity for digital adaptation in the most disadvantaged groups of workers; (5) the perception of spending too many unpaid hours, given the difficulty of controlling the time spent; (6) atomisation and the generalised loss of social links due to the weakening of work-related networks; and, as a consequence of the above, (7) psychological

J. Hill, J.G. Grzywacz, S. Allen, V.L. Blanchard, C. Matz-Costa, S. Shulkin, S. and M. Pitt-Catsouphes, 'Workplace flexibility, work hours, and work-life conflict: finding an extra day or two', *Journal of Family Psychology,* 2010*, vol.* 24, n. 3, 349-358. doi: https://doi.org/10.1037/a0019282 P. Moen, E.L. Kelly, E. Tranby, and Q. Huang, *'Changing work, changing health: can real work-time flexibility promote health behaviors and well-being?'*, Journal of Health and Social Behavior, 2011, vol. 52, n. 4, 404-429. doi: 10.1177/0022146511418979

[6] P. Peters, L. Den Dulk, and T. van der Lippe, *'The effects of time-spatial flexibility and new working conditions on employees' work–life balance: the Dutch case'*, Community, Work & Family, 2009, vol. 12, n. 3, 279-297. doi: 10.1080/13668800902968907. J.C. Messenger, '*Working time and the future of work'*, Future of Work Research Series, Geneva, ILO, 2018.

[7] Yu, R., Burke, M., & Raad, N. (2019). Exploring impact of future flexible working model evolution on urban environment, economy and planning. Journal of Urban Management, 8(3), 447–457. https://doi.org/10.1016/j.jum.2019.05.002
Soga, L. R., Bolade-Ogunfodun, Y., Mariani, M., Nasr, R., & Laker, B. (2022). Unmasking the other face of flexible working practices: A systematic literature review. Journal of Business Research, 142, 648-662. Coelho Junior, F. A., Faiad, C., Barbosa Rego, M. C., & Ramos, W. M. (2020). What Brazilian workers think about flexible work and telework. International Journal of Business Excellence, 20(1), 16. https://doi.org/10.1504/IJBEX.2020.104842

problems caused by isolation and new pressures from the home: stress, anxiety and depression or burnout.[8]

Regardless of their positive or negative impact of FWHs, and in the face of its growing importance for contemporary work organisation, it is not clear whether the diffusion rates of FWHs differ across European countries and societies. Southern Europe (SE) countries seem to have not achieved the same FWH diffusion rates of Northern Europe (NE) countries, despite the need of the former to improve both labour productivity and work-family life balances. The alleged reasons behind the lower FWH diffusion rate in SE countries are not clear, neither to what extent there is a 'real' under-adoption of such practices within the same occupational or industry sector across NE countries and SE countries[9].

In this article, we present the findings of a research that aimed to analyse whether SE countries really have lower diffusion rates of FWHs in comparison

[8] Greenhill, A., & Wilson, M. (2006). Heaven or hell? Telework, flexibility and family in the e-society: A Marxist analysis. European Journal of Information Systems, 15(4), 379-388. Thornton, M. (2016). Work/life or work/work? Corporate legal practice in the twenty-first century. International Journal of the Legal Profession, 23(1), 13–39. https://doi.org/10.1080/09695958.2015.1093939. Hasan, S. M., Rehman, A., & Zhang, W. (2021). Who can work and study from home in Pakistan: evidence from a 2018–19 nationwide household survey. World Development, 138, 105197. Cosano Ramos, A.; Vallejo Peña, A. y Ortega Gaspar, M. (2022). La satisfacción laboral y personal, la flexibilidad espacio-temporal en tiempos de pandemia. Actas del XIV Congreso Español de Sociología. Grupo 15; 30 de junio de 2022. Disponible en: https://congreso2022.fes-sociologia.com/wp-content/uploads/2022/07/Libro-de-Actas_final_web.pdf. Valoura, L. (2013) Time-Space flexibility and Work. Analyzing the "Anywhere and Anytime Office" in the Entertainment, New Media, and Arts sector. Culture Unbound, 5, 339-360. Peasley, M. C., Hochstein, B., Britton, B. P., Srivastava, R. V., & Stewart, G. T. (2020). Can't leave it at home? The effects of personal stress on burnout and salesperson performance. Journal of Business Research, 117, 58–70. https://doi.org/10.1016/j.jbusres.2020.05.014

[9] M. Kerkhofs, H. Chung and P. Ester *'Working time flexibility across Europe: a typology using firm-level data',* Industrial Relations Journal, 2008, vol. 39, n. 6, 569-585.
J.C. Messenger, *'Working time trends and developments in Europe'*, Cambridge Journal of Economics, 2011, vol. 35, n. 2, 295-316. J.M. Carcedo, F.G. Belenguer-Campos. and V.B. Álvarez-Carrasco, *'Flexibilidad del tiempo de trabajo en España: ¿Ha alterado la crisis el comportamiento del empleo a tiempo parcial?'*, Estudios de economía aplicada, 2012, vol. 30, n. 1, 209-236. H. Chung, and K.Tijdens, *'Working time flexibility components and working time regimes in Europe: using company-level data across 21 countries'*, The International Journal of Human Resource Management, 2013, vol. 24, n. 7, 1418-1434. D. Holman, *'Job types and job quality in Europe',* Human Relations, 2013, vol. 66, n. 4, 475-502. S. Gialis and L. Leontidou, *'Antinomies of flexibilization and atypical employment in Mediterranean Europe: Greek, Italian and Spanish regions during the crisis'*, *European Urban and Regional Studies,* vol. 23 n. 4, 716-733, 2016. H. Chung, and T. Van der Lippe, *'Flexible working, work–life balance, and gender equality: Introduction'*, Social Indicators Research, 2018, n. 151, 1-17. A. Carvalho Neto, *'Flexible working hours arrangements in Brazil'*, Revista Pensamento Contemporâneo em Administração, 2020, vol. 14, n. 2, 1-17.

to NE countries, using a worker-level approach that allowed to compare (at a quite general level) similar occupational categories and economic sectors of activity. We estimated to what extent working in a SE country reduces the likelihood to use FWHs in comparison to workers in NE countries. With our worker-level approach, we avoided the risk of 'ecological' fallacy related to a country-level or sector-level of analysis, and we observed whether a worker used FWHs within a country controlling for contextual variables like economic sector or occupation, as well as by workers' individual characteristics. After a brief review of our research problem and the relevant literature, we present the methodology of our study and the results of the application of multiple regression models to a large dataset from the European Working Conditions Survey-2015[10].

2. Theoretical Framework

2.1. Conceptualising FWHs

Flexible working arrangements aim to promote flexibility in job localisation, work schedules and the amount of time spent at the workplace, pursuing sharing benefits for companies and their workers[11]. The essential aspects to be regulated by flexible working arrangements can be summarised in three questions: When? Where? For how long?[12]. Following the criteria of the Georgetown University's Law Center[13], the main forms of flexible working arrangements are:

- Flexibility in working hours (including flexitime).
- Flexibility in managing the total number of worked hours.
- Flexibility regarding the workplace.
- Flexibility in the management of leaves (maternity, paternity, unpaid leave, etc.).

Our research focuses only on the flexibility in working hours (first category), which includes both flexitime (i.e., the possibility of changing/adapting the

[10] Eurofound, *European Working Conditions Survey* [dataset], 2015, available from: http://www.eurofound.europa.eu [Accessed 11 Nov 2020].
[11] E.J. Ko, and S.S. Kim, *'Intention to use flexible work arrangements: The case of workers in Korea and gender differences in motivation'*, Journal of Organizational Change Management, 2018, vol. 31, n. 7, 1438-1460. https://doi.org/10.1108/JOCM-01-2018-0001
[12] J. Hill et al. *Opus citatio*.
[13] J. Hill et al. *Opus citatio*.

entry and exit time schedules at work) and flexibility in managing the total number of (daily) worked hours.
This category could be further split according to who receives the benefit from flexibility, the company, or the worker. The former is called 'passive flexibility' or 'employer-oriented flexibility'[14]: the company adapts working hours according to the market demands and conjunctures[15]; the latter are labelled as 'worker-oriented flexibility', which (should) foster workers' satisfaction and motivation through the improvement of work-family conciliation[16]. However, we did not include these differences into the analysis because of our dataset's limitations and because they exceed the scope of our research.

2.2. Institutional Factors and Cross-country Variations of Flexible Organisation

The literature suggests that the diffusion of FWHs depends essentially on the characteristics of the institutional context, as well as the companies and the workers[17]. For instance, organisations offering more high-skilled jobs are more likely to implement FWHs[18]. In addition, the possibility to implement policies on a large scale on a larger workforce is an essential factor for implementing a culture of flexibility[19].

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[14] C. Fagan, C. Lyonette, M. Smith and A. Saldaña-Tejeda, *The influence of working time arrangements on work-life integration of "balance": A review of the evidence*, Conditions of Work and Employment, 2012, Series n. 3, Geneva, International Labour Office. H. Chung Heejung, K. Tijdens, *'Working time flexibility components and working time regimes in* Europe: *using company-level data across 21 countries'*. The International Journal of Human Resource Management, 2013, vol. 24, n. 7, 1418-1434. J.C. Messenger. *Opus Citatio*.

[15] A. Corominas, A. Lusa, R. Pastor, *'Using a MILP model to establish a framework for an annualised hours agreement'*, European Journal of Operational Research, 2007, vol. 177, n. 3, 1495-1506.

[16] D. Jijena-Michel and C. Jijena-Michel, *'El rol moderador de la flexibilidad del horario de trabajo en la relación del enriquecimiento trabajo familia y la satisfacción docente'*, Horizontes Empresariales, 2015, vol. 10, n. 2, 41-56. S. Lewis, 'Flexible Working Arrangements: Implementations, Outcomes and Management', In C. Cooper and I. Roberts, (eds.) *Annual Review of Industrial Psychology*, 18, Wiley, New York, 2003, 1-28.

[17] L. Golden, *'Limited access: Disparities in flexible work schedules and work-at-home'*, Journal of Family and Economic Issues, vol. 29, n. 1, 86-109, 2008. G.I. Kassinis and E.T. Stavrou, *'Non-standard work arrangements and national context'*, European Management Journal, 2013, vol. 31, n. 5, 464-477.

[18] D. Holman, *'Job types and job quality in Europe'*, Human Relations, 2013, vol. 66 n. 4, 475-502. D. Wheatley, *'Employee satisfaction and use of flexible working arrangements'*, Work, employment and society, 2017, vol. 3, n. 4. 567-585.

[19] S. Sweet, M. Pitt-Catsouphes, E. Besen and L. Golden *'Explaining organizational variation in flexible work arrangements: Why the pattern and scale of availability matter'*, Community, Work & Family, 2014, vol. 17, n. 2, 115-141. A. Carvalho Neto, *Opus citatio*.

The neo-institutionalist perspective[20] highlighted the influence that the institutional regime has on organisational behaviour[21]. These scholars showed that organisations within the same country share the same regulatory framework and bear the same institutional pressures, with direct consequences on human resources practices and the day-to-day life of the workers. For instance, the large empirical study by Hill *et al.* [22] suggests that culture influences the implementation of flexible working arrangements in organisations, since the sample of Asian countries showed some degree of resistance to carry out certain tasks in a place other than the organisation's own headquarters, consistently with their collectivist culture attitude.

Scholars in this area created several models for classifying European countries according to their institutional regime[23]. For instance, Esping-Andersen argued that the State is the major social provider in social democratic countries – especially Scandinavian ones – as well as in those with a socialist tradition, with somewhat less support in more conservative welfare states, like Germany and those countries under its influence, and even less in Mediterranean countries, being societies, which transfer a large part of the welfare responsibility to families[24]; by contrast, the countries of the liberal model (e.g., United Kingdom) pursue a well-functioning market to have a positive impact on social welfare[25].

Following a similar approach, Guillén[26] explains the conflicts in the organization of work and labour relations in each country according to their institutional tradition, as determined by its historical processes. Hall and Soskice[27] also highlight the importance of national institutions in the development of the economic structure and in the regulation of labour relations. The varieties of capitalism approach underlie historical reasons

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[20] (i.e.) P. J. DiMaggio. and W.W. Powell, *'The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields',* American sociological review, 1983, vol. 48, n. 2, 147-160. W.R. Scott, *Institutions and organisations*, Sage Publications, Thousand Oaks CA, 1995.

[21] D. Holman, *Opus citatio*.

[22] J. Hill et al., *Opus citatio*.

[23] K. Wall, *'Leave policy models and the articulation of work and family in Europe: a comparative perspective',* International review of leave policies and related research, 2007, n. 100, 25-43.
D. Holman, *Opus citatio*.

[24] G. Esping-Andersen, *The three worlds of welfare capitalism*, Princeton University Press, Princeton, 1990.

[25] *Ibíd.* G. Esping-Andersen. M. Ferrera, *'The 'Southern model' of welfare in social Europe'*, Journal of European social policy, 1996, vol 6, n. 1, 17-37. B. Amable, *The diversity of modern capitalism*, Oxford, Oxford University Press, 2013.

[26] M. Guillen, *Models of management: work, authority, and organization in a comparative perspective*, University of Chicago Press, Chicago, 1994.

[27] P.A. Hall and D. Soskice, *Varieties of capitalism: The institutional foundations of comparative advantage,* Oxford University Press, Oxford, 2001.

which, in turn, have implications for value and belief systems of whole countries and territories. This approach has led to the identification of a peculiar 'Mediterranean' variety of capitalism and governance[28].

2.3. Varieties of Capitalism and Flexible Working Hours

The 'Varieties of Capitalism' perspective suggests that the different institutional regimes of NE countries and SE countries could explain the different types of policies and strategies for FWHs undertaken in those countries. For the case of European countries, Chung and Tijdens[29] showed that companies located in SE countries show a lower likelihood to adopt FWHs, in comparison with NE countries and several Central European countries. Similarly, Messenger[30] found that SE countries have less workers in part-time employment and that this type of workers are more likely to have FWHs.

An explanation of these findings can be related to studies[31] that found a relation between the 'institutional regime' and work flexibility. Namely, NE countries (including Scandinavian and Liberal regimes) and, to a less extent, countries with a Continental-Corporatist model, show higher flexibility rates and more worker-led orientation than SE countries do.

On the other, a lower flexibility in working time schedules of SE countries has been observed[32], according to the predictions of the 'Mediterranean' variety of capitalism. Similarly, Chung and van der Lippe[33] found that Mediterranean countries show a lower proportion of workers with schedule control and teleworking in comparison to Liberal, Continental, and, especially, Scandinavian countries. In short, the specificities of the institutional regime of each country/group of country determine the likelihood of adopting FWHs.

During the last economic recession (2008-2015), real worked hours increased in Southern Europe and get a higher average than in the North (Figure 1). Two SE countries are among the five countries with the highest numbers of worked hours in Europe: Greece is 2nd with 39.1 hours (only surpassed by Poland), while Portugal is 5th with 35.9 hours; Italy and Spain are close to the average (33.1 and 32.5, respectively), although far from the values of the NE countries. All the NE countries are in the top ten of this classification (except Iceland), with Denmark (27.2), Norway (27.3) and the Netherlands (27.4) showing a good performance due to the low number of worked hours.

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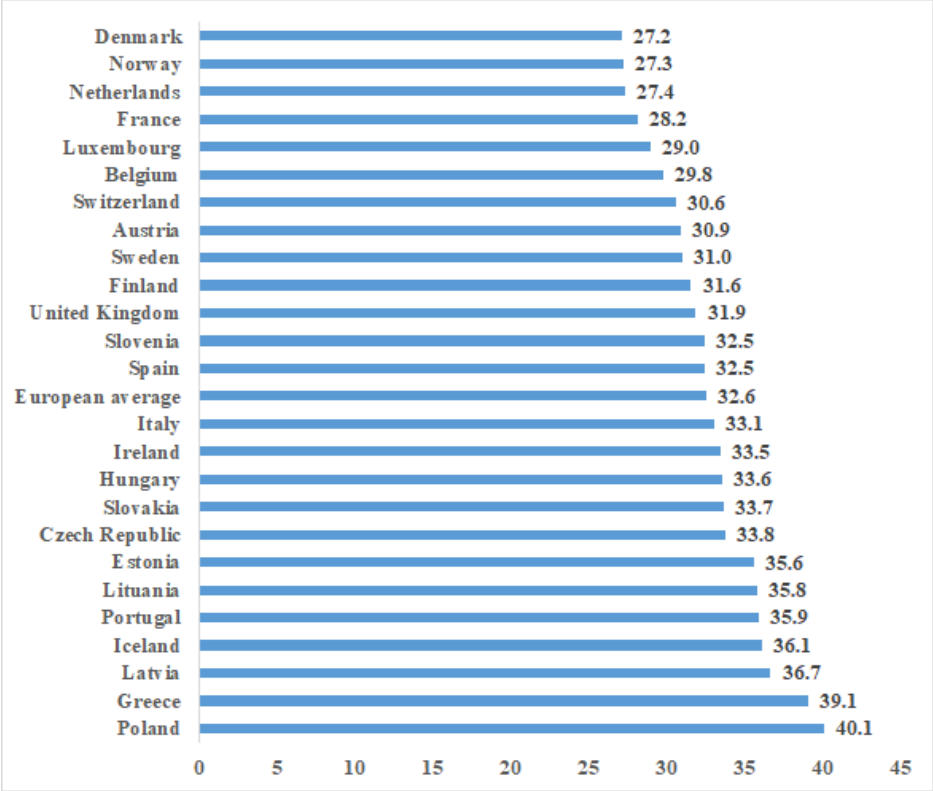
[28] Ferrera, *Opus citatio*.
[29] Chung and Tijdens, *Opus citatio*.
[30] Messenger, 2011, *Opus citatio*.
[31] Kerkhofs *et al., Opus citatio*.
[32] Vallejo-Peña and Giachi, , *Opus Citatio*.
[33] Chung and van der Lippe, *Opus citatio*.

Figure 1. Average weekly worked hours in OECD European countries (2015)



Source: OECD (2017); own elaboration

Recent analyses of EWCS data showed that SE countries have more rigid working hours than NE countries and found a positive correlation between such 'rigidity' and the amount of worked hours[34]. These findings suggest that the rigidity of working hours would hinder the possibility of reducing the number of working hours and, therefore, increasing productivity and other performance and well-being indicators. A possible explanation of these interrelations can be found in the recent history of the labour market dynamics of these countries.

[34] Vallejo-Peña and Giachi, *Opus citatio*.

2.4. Transformation of the Labour Markets in SE Countries

In South Europe, the government-trade union negotiations during the 1980s and 1990s secured the jobs of a large part of the population, leaving large social groups in precarious employment, being the unemployment rates highest amongst the youth and women[35]. Those negotiations generated a fragmented economic model of employment, in which the public administration gradually reduced its capacity as an employer. Similarly, industrial relations in countries such as Italy and Spain during the 1990s were characterised by workers and their representatives' reluctance to adopt FWHs, considered as an advantage for companies in their struggle of interest, while workers and trade unions prioritised employment protection as a strategy to generate stability[36].

The historical tendency to overload working time was compounded by the economic crisis of 2008, given the consequent social cuts in public spending in Greece, Spain, and Portugal. These cuts caused a fall in wages and a loss of contract stability, in a context of unbalanced negotiation, and they led to a culture of (more) rigid labour relations and distrust between government, employers and trade unions (Leonardi *et al.* 2011). This resulted in an institutional climate that hinders the establishment of flexibility as a driving force of the economy.

FWH policies in SE countries during the 2008-2015 economic recession led to a loss of job security and the application of contractual formulas that were detrimental to weak social groups (the youth, immigrants, and women), and prioritised companies' interests[37]. Moreover, the pressure of the crisis has increasingly pushed workers into atypical jobs, to the detriment of their stability and career development, and augmenting flexibility and practices rooted in the informal and shadow economy[38].

In sum, the weaknesses of SE labour markets lead to rigid formulas that protect workers' employment and wages in the short term. By contrast, in Central and Northern Europe, countries adopted opener approaches towards

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[35] F. Miguélez, and C. Prieto, *'Transformaciones del empleo, flexibilidad y relaciones laborales en Europa'*, Política y Sociedad, 2009, vol. 46, n. 2, 275-287. P. Robert, E. Saar and M. Kazjulja, *'Individual and institutional influences on EU labour market returns to education: a comparison of the effect of the 2008 economic crisis on eight EU countries'*, European Societies, 2020, vol. 22 n. 2, 157-187, 2020.

[36] L. Leonardi, A. M. Artiles, O. Molina, D. Calenda, and P.C. Oto, *'¿Es exportable la flexiseguridad? Un estudio comparado de Italia y España'*, Cuadernos de Relaciones Laborales, 2011, vol. 29, n. 2, 417-443. https://doi.org/10.5209/rev_CRLA.2011.v29.n2.38022

[37] P. Barbieri, and S. Scherer, *'Labour market flexibilization and its consequences in Italy'*, European sociological review, vol. 25, n. 6, 677-692. 2009.

[38] Gialis and Lentidou, *Opus citatio.*

FWHs in negotiations, resulting in a better adaptation of conservative and social democratic models, and achieving some favourable outcomes for companies and workers during the 1990s and early 2000s[39]. Subsequent findings[40] reinforced this evidence, showing that institutional commitment to Welfare State increases the likelihood of the application of FWHs at the company level. They also observed that diffusion of FWHs is higher in large organisations rather than in small ones. Both factors would contribute to explain the lower diffusion of FWHs in SE countries in comparison to NE countries.

2.5. Research Hypothesis

Following the theoretical framework provided above, we expect that working in a SE country significantly reduces the likelihood of the worker to have FWHs. However, we want to check whether this relation is maintained if we include a set of control variables on working conditions and other characteristics of the workers: economic sector, occupation, educational level, amount of worked hours, and basic sociodemographic variables. In other words, we aim to check whether the relation between the country of residence and having FWHs is spurious or not.

3. Methodology

The study uses data from the 6th wave of the European Working Condition Survey (EWCS, 2015)[41] on a representative sample of workers in each European country (n=45,000 workers). The EWCS is one of the best sources of information for the generalised study of labour flexibility in countries like Spain[42]. We included only the last wave to limit the temporal scope of the research and then avoid biases due to recent developments in the countries included into the sample.

The territorial scope of the research refers to the distribution of European countries based on both geographical criteria and productivity levels that are

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[39] See: C. Wallace, *'Work flexibility in eight European countries. A cross-national comparison'*, Czech Sociological Review, 2003, n. 21, 773-794. A. Carvalho Neto, *Opus citatio*.

[40] L. Den Dulk, S. Groeneveld, A. Ollier-Malaterre and M. Valcour *'National context in work-life research: A multi-level cross-national analysis of the adoption of workplace work-life arrangements in Europe'*, European Management Journal, 2013, vol.3, n. 5, 478-494.

[41] Eurofound, *Opus citatio*.

[42] F.J. Pinilla García and A. López Peláez, *'The Intensification of Work in Spain (2007-2011): Teamwork and Flexibility'*, Revista Española de Investigaciones Sociológicas, 2017, n. 160, 79-94. doi: http://dx.doi.org/10.5477/cis/reis.160.79. Robert *et al., Opus citatio*.

interrelated according to the literature review. We got the following blocks of countries:

- NE countries: Austria, Belgium, Denmark, Finland, Germany, Ireland, Luxembourg, the Netherlands, Norway, Sweden, Switzerland, and the United Kingdom
- SE countries: Greece, Italy, Portugal, and Spain. We analysed this block in detail, estimating the effects for each country separately in each model.

The final sample including only the above-mentioned countries is 22,389 workers. If we include only those cases that have no missing values for the dependent variables of our analysis, the size of the final sample drops to 21,512, 22,389, and 21,485 respectively for each logistic regression model. To measure the dependent variables, we used two basic components of the flexibility of working hours: whether the number of hours worked change by day, and whether the times of entry and exit to work change by day[43]. According to this, we used the following indicators:

- The respondent works the same number of hours every day (item Q39_a of the questionnaire): Yes/no
- The respondent gets fixed schedules for entering and leaving work (item P39_d of the questionnaire): Yes/no

These indicators allow to identify the factors related to different component of the flexibility of working hours on a day-to-day base. By crossing these indicators, we get two binary variables that represent summary indexes of flexibility (Table I):

- 'Very rigid working hours': A variable clustering workers who both work the same number of hours every day and have fixed starting and finishing times (recoded as Q39ad_REC_1)
- 'Very flexible working hours': A variable clustering workers who neither work the same number of hours every day, nor have fixed work entry nor exit times (recoded as Q39ad_REC_2)

[43] Holman, *Opus citatio*. Messenger, *Opus citatio*.

Table I. Variables

CODE	CONTENT OF THE ITEM	SCALE/CATEGORIES
Dependent variables		
Q39a	Working the same number of hours every day	Yes/No
Q39d	Working with a fixed entry and exit schedule	Yes/No
Q39ad_REC_2	Very flexible working hours ('No' in both Q39a and Q39d)	Yes/No
Q39ad_REC_1	Very rigid working hours ('Yes' in both Q39a and Q39d)	Yes/No
Independent variable		
COUNTRY	Living in a Southern European country	Yes/No (and which: Greece, Italy, Portugal, or Spain
Control variables		
Q2a	Sex	Man/Woman
Q2b	Age	15-91
Q7_lt	Self-employed	No/Yes
Q24	Number of worked hours every week	1-168
Q26	Number of worked days every week	1-7
Q39b	Working the same number of days every week	No/Yes
Q39c	Working the same number of hours every week	No/Yes
nace_r1_lt_4	Sector of economic activity	Agriculture, Industry, Services, Public sector
CREAT_OCC	Creative occupation	No/Yes
EDUCATION	Level of educational attainment	Secondary (1st level) or lower; Secondary (2nd level); Between Secondary and Tertiary; Tertiary

Source: EWCS (2015); own elaboration.

The aim of the analysis is to determine whether there is a robust, significant, and negative correlation between working in a SE country and having flexible working hours, controlling the potential effect of other variables. As independent variable, we used the binary variable about the distribution of workers among NE countries and SE countries. As control variables, we used sociodemographic features which may be related to different positions and status within organisations or professional careers, like age, or issues of work-

life balance, maternity, and part-time work, like gender. We also considered features of work like the distinction between self-employed workers and employees, since the former is associated with higher levels of time flexibility, as well as the level of formal education.
The sector of the economy and the type of occupation may be important to explain both the content of work and productivity levels. For the occupational category we used the concept of 'creative occupations' as originally understood in the work of Florida[44] on the labour market in the United States and its subsequent applications to European countries[45]. The concept of creative occupations facilitates the distinction between occupations based on criteria of creativity and flexibility from the rest.[46]
Finally, we included features related to the flexibility of working hours on a weekly scale are considered instead of on a daily base[47], like the number of hours worked per week and the number of working hours per week, as well as whether the interviewee works the same number of hours and days every week (Table I).

4. Findings

4.1. Descriptive Analysis

Table II shows how the dependent variables about FWHs differ between NE and SE countries. Cramer's index V shows that there are significant cross-country differences and between the NE and SE blocks as well. In the first case, all the V-indices obtained are above 0.1 and statistically significant, with over 99.9% confidence; in the second case, the V-indices are somewhat lower, but still significantly different from 0 with a high degree of reliability. The most significant cross-country differences (and between North and South blocks) relate to the proportion of workers in each country who:

- Work for a variable number of hours.
- Have very flexible working hours.

[44] R. Florida, *The Rise of the Creative Class,* Basic Books, New York, 1996.
[45] R. Florida and I. Tinagli, I. *Europe in the creative age,* Carnegie Mellon Software Industry Center and Demos, Pittsburgh and London, 2004.
[46] These Authors include among the creative occupations the following categories: management and executives (ISCO 12-13), liberal arts and professionals (ISCO 21-24) and some of the occupations classified in the section of technicians and associated professionals (ISCO 31-34).
[47] Messenger, 2011; 2018, *Opus citatio*.

Consistently to our research hypothesis, NE countries show a higher proportion of workers with FWHs and a significantly lower proportion of workers with 'very rigid' working hours. No country in the North ranks below any country in the South in terms of the proportion of workers with a flexible number of hours worked every day, nor in the proportion of workers with 'very flexible' working hours, while there are a few exceptions in the case of starting and finishing times, concerning Germany, Luxembourg and Switzerland, whose values are comparable to those of some countries in the South. Similarly, no country in the North is above any country in the South in terms of the proportion of workers with 'very rigid' working hours. In summary, the differences between NE Europe in terms of work time flexibility are consistent.

Table II. Flexibility of Working Hours between Northern and Southern Europe

	% of workers with flexible number of working hours each day	% of workers with flexible entry and exit schedule	% of workers with 'very flexible' working hours	% of workers with 'very rigid' working hours
North	**49.1%**	**41.9%**	**32.8%**	**41.9%**
Austria	58.6%	51.8%	41.3%	30.9%
Belgium	46.4%	40.9%	30.7%	43.4%
Denmark	70.2%	48.7%	40.8%	21.9%
Finland	57.7%	55.4%	45.3%	32.5%
France	51.1%	39.6%	31.1%	40.5%
Germany	45.7%	37.7%	30.2%	46.9%
Ireland	43.8%	43.0%	33.6%	46.8%
Luxemburg	40.0%	36.9%	25.1%	48.2%
Netherlands	52.4%	51.7%	40.3%	36.2%
Norway	49.1%	40.3%	32.0%	42.6%
Sweden	60.0%	43.8%	35.5%	31.8%
Switzerland	46.1%	34.7%	30.0%	49.2%
United Kingdom	43.1%	43.4%	32.8%	46.4%
South	**33.8%**	**34.9%**	**25.4%**	**56.7%**
Greece	37.7%	36.9%	28.1%	53.5%
Italy	36.9%	38.5%	29.2%	53.9%
Portugal	31.5%	38.5%	24.6%	54.6%
Spain	33.4%	31.0%	23.4%	59.0%
TOTAL	**44.3%**	**39.4%**	**30.4%**	**46.8%**
N	22365	22347	22333	22333
Cramer V (all countries)	0.190***	0.130***	0.191***	0.126***
Cramer V (north vs South)	0.140***	0.078***	0.142***	0.081***

Source: EWCS (2015); own elaboration.

The NE countries with the highest proportion of workers with FWHs are Austria, Denmark, Finland, the Netherlands and, somewhat further away,

Sweden (Table II). In particular, Austria, Finland, and the Netherlands also show a high proportion of workers with flexible starting and finishing times, while Austria, Denmark, Finland and Sweden show a low proportion of workers with very rigid working hours. Among SE countries, Spain shows the highest proportion of workers with rigid working hours according to all indicators, followed very closely by Portugal which has even fewer workers with a variable number of hours every day. In contrast, Italy and Greece show similar values to each other and are somewhat closer to the European average.

4.2. Multivariate Analysis

This section shows the results of the estimation of logistic regression models to find out whether the above-mentioned cross-country differences about the flexibility of working hours stand after including control variables that potentially influence the rigidity or flexibility of working hours. In particular, we used binary logistic estimators following a 'backwards' estimation procedure, i.e., first including all the variables in the analysis and then excluding those variables whose effect was not significant, in a sequential manner. A probability threshold of 5% was used for the input and 10% for the elimination of variables during the estimation process. This process has been stopped at the 4th or 5th step for the variables Q39a and Q39ad_REC_1, respectively, while it has been stopped at the 1st step for Q39d and at the second step for Q39ad_REC_2.
Table III shows the final model obtained for each of the four dependent variables. Each model contains the values of the exponential transformation of the coefficient of each variable that eventually entered into the final model, i.e. the odds ratio indicating the effect of the variable on the probability that the dependent variable will take place.[48] Each model also contains a series of information and reliability indexes like sample size, Chi-test, the Hosmer and Lemeshow test, how much -2log likelihood changes between models, the Cox

[48] If a variable is not included into the final model, its lack of significance has been indicated by the acronym N.I. (Not Included). Those variables labelled as N.S. (Not Significant) have been included in the final model but have no (at least) 95% significance (for individual variables, the input threshold is 90%). The primary sector (agriculture, etc.) is the reference category for the economic sector variable and the category '1st stage of secondary education (or lower)' is the reference category for the educational attainment level. We used the block of NE countries as the reference category for the independent variable to isolate the context effect of the SE countries.

and Snell's or Nagelkerke's R-square indexes and the overall percentage of right predictions (Table III).[49]

Table III. Logistic Regression Analysis of the Daily Flexibility of Working Hours

	Flexible number of working hours each day	**Flexible entry and exit schedule**	**'Very flexible' working hours**	**'Very rigid' working hours**
Variables	**Exp(B)**			
North country	***	***	***	***
Greece	0.493***	0.614***	0.575***	2.034***
Spain	0.493***	0.585***	0.579***	2.125***
Portugal	0.385***	N.S.	0.561***	1.657***
Italy	0.589***	N.S.	N.S.	1.608***
Women	N.I.	0.850***	0.835***	N.I.
Age	N.I.	N.S.	1.003*	N.I.
Self-employed	2.457***	2.831***	3.166***	0.391***
# worked hours	0.994***	1.005***	N.I.	N.I.
# worked days every week	N.I.	1.058**	1.080***	N.I.
Not working the same # days every week	1.297***	1.515***	1.409***	0.646***
Not working the same # hours every week	16.800***	6.495***	13.398***	0.075***
Agriculture	***	***	***	***
Industry	0.557***	0.521***	0.529***	1.950***
Services	0.743***	0.664***	0.695***	1.469***
Public sector	0.862	0.499***	0.530***	1.397***
Creative	1.469***	1.611***	1.649***	0.640***

[49] Table A1 in the Annex shows the changes in model's -2log likelihood related to the elimination of each variable in the last step of each model. In other words, these values indicate the overall effect that each variable would have on the explanatory capacity of each model. However, the values associated with each variable between different models are not comparable, because each model is characterized by a different number of variables and categories included in the last step. Therefore, we suggest comparing the contributions of each variable within the same model.

occupations				
Primary/secondary education	***	***	***	***
Superior secondary education	N.S.	N.S.	N.S.	N.S.
Between secondary and tertiary education	N.S.	N.S.	N.S.	0.824***
Tertiary education	1.584***	1.358***	1.363***	0.612***
Constant	0.220***	0.206***	0.085***	1.780***
Statistics	**Model information (last step)**			
N	21512	21493	21485	21485
Chi-test	9668.983***	6665.137***	8809.600***	8410.580***
Hosmer and Lemeshow	77.227***	72.371***	54.553***	70.261***
-2log likelihood	19929.236	22232.856	17664.803	21230.110
R2 Cox y Snell	0.362	0.267	0.336	0.324
R2 Nagelkerke	0.484	0.361	0.475	0.433
% right predictions (global)	80.4 %	75.8 %	81.5 %	76.4%

Source: EWCS (2015); own elaboration

Findings show that the negative correlation between working in SE and working hours flexibility stands in all the estimated models, despite other variables show a high correlation with the dependent variables, excepting one variable for Italy and another one for Portugal (Table III). Working in a SE country would approximately double the likelihood of having very rigid working hours and, in contrast, would reduce by 50% the likelihood of working a flexible number of hours every day, *ceteris paribus*.

Similarly, the likelihood of having flexible entry and exit schedules and very flexible working hours would be reduced by 38.6% and 41.5% respectively for Greece and Spain, whereas we did not observe any significant relation for Italy or Portugal in this case (Table III). However, the observed relations are quite high, stand in almost all models and are statistically significant, with more than 99.9% likelihood.

Furthermore, there are no big differences due to gender or age (Table III). Being a woman reduces by 15% the likelihood of flexible entry and exit schedules, and by 16.5% the likelihood of very flexible working hours, while age increases very slightly the likelihood of having very flexible working hours

(0.3% per year). The educational attainment level does not seem to be important, excepting the tertiary education category, which increases by 35-59% the likelihood of FWHs (depending on the indicator) and reduces by 38.8% the likelihood of very rigid working hours.
We found several significant relations in the variables related to work (Table III). Self-employed people double and even triple the likelihood of FWHs while reduce the likelihood by less than half (60.9%) of having very rigid working hours. The sector of economy is significant too: in general, working in a sector other than agriculture would have a negative effect on work time flexibility, and this effect is particularly high for the industry and the tertiary sector. The type of occupation is significant too: working in a creative occupation (managers, scientists, liberal professions, specialised technicians, artists, sportsmen, etc.) would increase by 47-65% the likelihood of FWHs while reduce by 36% the likelihood of very rigid working hours.
Other aspects of work time flexibility have significant effects. Flexibility regarding the number of days of work in a week increases the likelihood of having FWHs (especially of flexible entry and exit schedules) and reduces the likelihood of having very rigid working hours. Flexibility regarding the number of hours worked per week show a very high correlation with the flexibility of working hours and, in particular, with the likelihood of working a variable number of hours every day. By contrast, the overall amount of time spent on the job has limited effects:

- The number of worked hours slightly reduces the likelihood of working a variable number of hours, but it increases slightly the likelihood of flexible work entry and exit times.
- The number of worked days slightly increases the likelihood of flexible starting and finishing times and very flexible working hours.

Despite the existence of these high and significant effects, we recognised that the country of residence stands as a strong factor in explaining the likelihood of having FWHs.

5. Discussion

We expected that working in a SE country significantly reduces the likelihood to have FWHs in comparison to workers located in NE countries. Applying logistic regression models to survey data from the 2015-EWCS, we checked the supposed relation between country of residence and having FWHs, controlling by a set of variables on working conditions and other

characteristics of the workers, like economic sector, occupation, education, amount of worked hours, and basic sociodemographic variables.

We found that NE countries show a higher proportion of workers with FWHs and a significantly lower proportion of workers with rigid working hours. No country in the North ranks below any country in the South in terms of flexibility in the number of daily worked hours, and this also applies for the indicators on starting and finishing times, with a few exceptions. Therefore, it seems that the differences in terms of FWHs between the North and the South are clear: working in a NE country would almost double the likelihood of having very flexible working hours than in a SE country. For example, it would approximately double the likelihood of working a flexible number of hours every day, *ceteris paribus*. These effects seem somewhat higher and more frequent for Greece and Spain than for Italy and Portugal. Furthermore, some control variables seem to be important to explain the flexibility of the working hours. While job or occupational variables seem to be influential, sociodemographic variables do not.

Our contribution is important because, using a worker-level methodological approach, we showed that working in a SE country reduces the likelihood of the worker to have FWHs in comparison to a NE country, *ceteris paribus*. Our findings reinforce the idea of the existence of a 'context effect' due to the country of residence that is not conditioned by the sectoral composition of the economy because this is variable has been (at least, partially) controlled in the analysis.

Following our theoretical review, we assume that the institutional regime of the country of residence should have a determining influence on the flexibility of the working hours which, in turn, would condition performance indicators like labour productivity, work-family life balance, and overall socioeconomic well-being. In short, a neo-institutionalist perspective provides an explanation for the existing link between country of residence and uneven diffusion rates of FWHs, through the influence of regulation, labour policy, collective bargaining traditions, and the labour market characteristics.

Our research has several limitations. While most of them are related to the availability and granularity of the variables available in the EWCS, an important limitation has to do with the difference between formal economy and shadow economy. Our data only refer to workers employed within formal organisations in the 'visible part' of each national economy. However, we were not able to observe the labour conditions of people working in the irregular (shadow, black, criminal) economy, nor the influence of the informal economy on FWHs and similar dynamics. This influence can be important for the economies of SE countries, and even more following the consequences of the recent post-2008 economic recession.

As showed in the theoretical review section, the consequences of the crises could have boosted even further flexible working conditions in Southern societies through 'atypical' or precarious jobs, often at the interplay of the irregular and informal economy. This could generate a 'phony' perception of greater flexibility of the labour market in SE countries, as well as the higher seasonality of some of their economic sectors (i.e., tourism, agriculture, etc.).[50] In any case, our findings showed that even if all these differences may exist, there is also a 'context effect' likely due to the institutional regime of the country of residence. If we expect that work flexibility increased in SE countries during the post-crisis years. So, our findings are even more important because we showed that SE countries have a lower rate of FWHs than NE countries following the economic recession.

[50] In any case, as pointed out by Barbieri and Scherer (2009), atypical jobs are often characterised by 'rigid' work schedules instead of flexible ones. In this sense, there is no contradiction between our argument/findings and the increasing of atypical jobs in SE countries.

Annex

Table A1. Logistic regression analysis of the daily flexibility of working hours; changes in the model's likelihood after eliminating the variable

	Working a flexible number of hours each day (Step 4)	**Working with flexible entry and exit schedule (Step 1)**	**'Very flexible' working hours (Step 2)**	**'Very rigid' working hours (Step 5)**
Country	290.238	124.698	116.781	293.843
Woman		20.194	19.439	
Age		3.737	4.063	
Self-employed	270.103	437.740	466.132	296.464
# worked hours	16.287	8.888		
# worked days every week		6.465	14.677	
Not working the same # days every week	24.179	81.952	51.995	62.371
Not working the same # hours every week	5058.878	2461.323	4264.856	4009.407
Sector	79.495	91.650	68.479	70.183
Creative occupations	78.021	136.955	116.240	115.842
Level of educational attainment	88.316	70.733	65.573	110.015

Source: EWCS (2015); own elaboration

The Legal Protection of the Work Environment in Nuclear Facilities: A Comparative Study between Egyptian and American Laws

Ola Farouk Salah Azzam *

Abstract

This research explores the protection of the work environment in nuclear facilities and their impact on the workers' health. This includes examining the position of the American and Egyptian systems of nuclear safety and security procedures; occupational safety and health procedures; standards and guarantees; the nuclear accidents and compensation for the workers of nuclear facilities.

Keywords: *Nuclear law; Nuclear facilities; Work environment; New pollutants and risks; Nuclear accidents; Social and civil and complementary compensation.*

Introduction

There is no doubt that the aggravation of pollutants in nuclear facilities results in a reduction in production and ultimately puts a negative impact on the country's economic and social development process ([1]). Therefore, most countries have intervened with regulations for the protection of the

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([1]) The Stockholm Declaration provides: "Both aspects of a man's environment, the natural and the man-made, are essential to his well-being and to the enjoyment of basic human rights and the right to life itself." United Nations Conference on the Human Environment, June 5-16, 1972, Stockholm Declaration of the United Nations Conference *on the Human Environment*, 2, U.N. Doc. AICONF.48/14/rev. 1 (June 16.1972).

public environment and the work environment together with other laws such as the nuclear law, in several legislations. The internal legislator intervened to legalize this regulation with deterrent texts and procedures to protect the work environment (2); It imposed on employers a general obligation to provide a healthy, safe and secure work environment, coupled with several procedures and measures such as licenses and inspections entrusted to certain administrative authorities. This constitutes a guarantee to monitor the provision of this environment and its freedom from risks. But the legislators stopped at this point and their legislation did not go further than that, so the legislative treatment - especially the Egyptian one - fell short on protecting the nuclear work environment as a qualitative environment of dangerous environments, especially regarding the protection of its human resources, aka workers, which is the subject of research (3).

Many legal issues related to the protection of the work environment in nuclear facilities remain problematic for research and regulation. The interest of most legal systems in enacting legislation to protect the environment is recent. This interest was manifested in trying to find various solutions to protect the work environment in nuclear facilities and the mechanisms for activating this protection protocol. These systems found their need in an independent legal regulation of the public environment; they stopped at this point, and did not address dangerous or nuclear facilities.

The Importance of this Research and its Justifications

- The work environment has not attained the protection it deserves for a long time by law.
- Legally securing the work environment in nuclear facilities.
- Identification of environmental pollutants and their jurisprudential and legislative treatment.

(2) Ken Silver: *The Energy Employees Occupational Illness Compensation Program*, A New Legislation to Compensate Affected Employees, Mohan Journal, VOL.53, NO.6, JUNE 2005, p.26.

(3) David M. Bearden: *Environmental Laws: Summaries of Major Statutes Administered by the Environmental Protection Agency*, Congressional Research Service, 7-5700, RL30798, 2013, p.10, OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970, [As Amended Through P.L. 109–236, Enacted June 15, 2006], [Public Law 91–596, December 29, 1970], As Amended Through P.L. 109-236, Enacted June 15, 2006, February 27, 2018.www. crs.gov.

- Discussing mechanisms for providing a safe work environment and studying safety and security procedures.

Research Aims

• Identifying the preventive and procedural role played by the concerned authorities to combat the pollution of the work environment.
• Investigate the most important sources of nuclear pollution.
• Demonstrate the efforts and policies of legislation in this field.
• Demonstrate the position of comparative systems.
• Presenting legislative solutions and models.

Section I - Nuclear Work Environment and its Protection

The risks to the work environment have increased. Yet, the search for various sources of nuclear energy and its use in various fields, especially for peaceful purposes, is increasing. Other dangers that are more harmful to the health of the workers and the work environment are emerging, not to mention the various risks of pollution that have increased to the extent of excessive use of chemical, nuclear substances, etc ([4]). Accordingly, the study in this chapter is divided into the following:

Chapter I: Introducing the Nuclear Work Environment and its exposure to Radiation.

Chapter II: Methods and Procedures for Nuclear Safety and Security.

Chapter I Introducing the Nuclear Work Environment and the Radiation Exposure to it

To protect workers from the dangers of nuclear radiation, recommendations were issued by international organizations regarding the rules of prevention, the necessity of prior licensing, and the limits of the radiation dose to which the worker is allowed to be exposed. National Laws were issued adopting these recommendations, and: Egypt's Nuclear Law (2010))/ (The American's Energy Policy Act of 2005, Public Law No. 109-58, amended the Atomic Energy Act of 1954), and its executive

([4]) International Labour Organization: *Mental health in the workplace*, situation analysis United States, Publications of the International Labour Office, CH-1211 Geneva 22, Switzerland, ISBN 92-2-112225-5, First published 2000, p.5.

regulations were issued. Accordingly, the study is divided into the following:

Topic I: The Definition of Nuclear Facilities.

Topic II: The Nuclear Law and the Regulation of the Use of Nuclear Radiation.

Topic I. Introduction to Nuclear Facilities. Defining Nuclear Facilities and Areas of Use of Nuclear Energy

The environment is the space that occupies what surrounds us, so the work environment may be dangerous facilities by nature or according to the materials they use; for example, nuclear facilities (5).

(A) Definition of Nuclear Facilities

Several international conventions have taken the presence of radioactive nuclear material inside a work place as a criterion for its nuclearization, while the Paris Agreement left a supervisory committee with the power to exclude certain types of facilities from the convention's scope of application, in cases where the risks are low (6). Article 1 of the Paris Agreement states: "A nuclear facility means reactors, other than those forming part of a means of transport, plants for preparing or manufacturing nuclear materials, plants for isotope separation from nuclear fuel, radioactive nuclear fuel processing plants and nuclear material storage facilities— except for the storage of these materials during transport - as well as any other facility containing nuclear fuel or radioactive products or waste determined by the supervisory committee (7)".

(5) Teall E. Crossen: *Multilateral Environmental Agreements and the Compliance Continuum*, bepress Legal Series, The Berkeley Electronic Press, U.S.A, 2003, p.2. http://law.bepress.com/expresso/eps/36!c 2003. Laure Bertrand, *"Les sources internes: des Lois de protection de la nature à la Charte constitutionelle de l'environnement"*, in Leçons de Droit de l'Environnement, Manuel Gros (Paris: Ellièpses, 2013), p.8.

(6) El-Sayed Eid Nile: *The New Labor Law and Protection of Workers from the Risks of the Work Environment*, Dar Al-Nahda Al-Arabiya, 2004, p. 837.

(7) As for the Vienna Convention, its first article states: "nuclear facility means: 1- any nuclear reactor except for the reactor that is supplied by a means of sea or air transportation to be a source of its motive power or any other purpose. 2- any factory that uses nuclear fuel to produce nuclear materials, or any factory. For the preparation of

Since the nuclear law is the law that regulates the protection of nuclear facilities from nuclear pollution, the Egyptian Nuclear Law No. 7 of 2010 defined nuclear facilities as: "The institution and its associated buildings and equipment in which nuclear materials are produced, converted, used, traded or stored, or permanently disposed from, excluding uranium and thorium metal extraction and conversion facilities and radioactive waste management facilities".

The nuclear law also stipulates that: "The granting of licenses and permits stipulated in this law shall be in return for payment of the fees indicated in the following: first: nuclear power plants for electricity generation or water desalination: the fee for a single permit is three million pounds, and the operating license fee is one thousandth of the price of the total electric energy produced annually or of the price of the total desalinated water annual (8)".

Therefore, the law gave examples of these facilities: nuclear fuel factories, research and test reactors, critical complexes, nuclear power reactors, nuclear fuel depots, spent nuclear fuel reprocessing plants (9).

While the American Legislator did not define nuclear facilities, but mentioned some types of them. For example, and in several laws, we find many facilities that are not limited to nuclear reactors, but extend in scope to include any facility that deals with nuclear energy sources or those that use nuclear radiation. A case in point is the facilities of the Ministry of Energy that use nuclear energy, centers, laboratories, laboratories and

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nuclear fuel 3- any equipment intended to store nuclear materials other than the storage necessary in case of transporting such materials.

(8) "..Second: Research and Test Reactors: The fee for a single permit is one hundred thousand pounds, and the fee for operating a license is twenty thousand annually. Third: other nuclear facilities: the fee for a single permit is two hundred thousand pounds, and the operating license fee is one hundred thousand pounds annually. Fourth: radiological facilities: with the exception of licenses for the use of x-ray devices and radioactive isotopes intended for use in the medical field and which are subject to the supervision of the Ministry of Health, the operating license fee is one hundred thousand pounds for the period of the license granted, and the operating license fee for various medical radiological applications is five thousand pounds for the license granted…Fifth: personal licenses for individuals: the licensing fee for the individual for the period of the license granted is ten thousand pounds, and the licensing fee for the individual for various medical radiological applications is one thousand pounds for the period of the license granted".

See Article (32) of the Egyptian Law, Law No. 211 of 2017, amending some provisions of the Law Regulating Nuclear and Radiological Activities, promulgated by Law No. 7 of 2010, Al-Waqa'a Al-Masryah in Issue No. 47 bis "b" issued on November 29, 2017.

(9) Article (2) and Article (3) of the Egyptian Nuclear Law No. 7 of 2010 AD.

hospitals that deal with radiation and nuclear materials, and mines and tunnels that depend on these radiations.
By comparing the American and Egyptian systems; we find that the Egyptian legislator has done well by setting an explicit definition of the nuclear facility, and specifying the facilities that acquire the status of a nuclear facility, whether they are purely nuclear or related to nuclear activity, while the American legislator did not set a specific definition of the nuclear facility and mentioned pictures of it, and despite that they agreed the two systems have these images as an example; any other facilities can be added to it.
And if we think that it would have been more appropriate for the Egyptian legislator not to exclude from the list of nuclear facilities other facilities for the extraction and conversion of uranium and thorium minerals and radioactive waste management facilities - which the American legislator mentioned - given their seriousness and their own nature and the presence of nuclear elements in such facilities.
Therefore, we can say that the institution or workplace (as a place, buildings, equipment and tools) is described as nuclear when any nuclear materials are used in the production process, and when any nuclear materials used in the workplace are transferred, handled or stored. This means that the association of the word "nuclear" and the word "workplace" lies in what the first requires of a special subjectivity characterized by the danger that affects the second. Thus, when nuclear materials, equipment or waste is present in a work environment, it is described as a nuclear work environment.

(B) Peaceful Uses of Nuclear Energy Sources in Facilities

The progress that many societies have witnessed due to technology has prompted several facilities to expand their activities and use nuclear energy. This energy is used for many peaceful purposes; such as power generation, medical and agricultural uses, archaeology study, space sciences and other activities in which many facilities are working in the recent times ([10]).
These facilities adapt the nuclear radiation (such as Alpha, Beta and Gamma) emitted by some radioactive elements in order to affect the

([10]) Veronique Jaworski: *"La Charte constitutionelle de l'environnement face au droit penal"*, Revue juridique de l'environnement, Paris, 2005, p. 177, Vincent Rebeyrol: *L'affirmation d'un 'droit à l'environnement' et la réparation des dommages environnementaux*, Revue juridique de l'environnement, Paris, 2010, p.31.

atoms and compounds of vital substances in humans, animals and plants, modifying their composition, reproduction or growth in benign ways that preserve the integrity of cells and often do not lead to any undesirable negative results. As long as safety precautions are taken into account, in contrast to the use of nuclear energy for military purposes such as the manufacture of nuclear bombs, the activities of these facilities will have no negative consequences ([11]).

There are several uses of a nuclear reactor in the generation of nuclear energy, and electricity. Radioactive isotopes and other radiation techniques are used for many purposes. In the medical field, they can be used for diagnostics, radiotherapy, and sterilization of medical instruments. In the agricultural field, they can be used in land reclamation, and animal production. Radiation can also be used in industry and scientific research… ([12]).

We mention here the multiple uses of peaceful nuclear energy sources regulated by the US Atomic Energy Act: export-licensing systems for highly enriched uranium for use as fuel, scientific research or nuclear tests, as well as the many uses of nuclear reactors, among others. For example, we find the text as follows ([13]): "The Atomic Energy Act of 1954; was determined: The US government is actively developing an alternative fuel or target that can be used in the reactor:

- The design, manufacture or utilization of atomic weapons;
- The production of special nuclear material; and;
- The use of special nuclear material in production of energy…([14])".

)[11](https://www.amacad.org/publication/nuclear-liability-key-component-public-policy-decisi -on-deploy-nuclear-energy-southeast/section/5. Ratib Al-Saud: *Man and the Environment,* Dar Al-Hamid, Amman, 2004, p. 100, Abdel-Qader Merbah: *International Law for the Security Use of Atomic Energy*, Kasdi University, Algeria, 2011, p. 19, Amer Tarraf: *Environmental Nuclear Pollution and International Relations*, first edition, Glory of the University Foundation for Studies, Publishing and Distribution, Beirut, 2008, p. 122.

([12]) David M. Bearden: *Environmental Laws,* op.cit, p.10, OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970, [As Amended Through P.L. 109–236, Enacted June 15, 2006], [Public Law 91–596, December 29, 1970], As Amended Through P.L. 109-236, Enacted June 15, 2006, February 27, 2018. El-Sayed Eid Nayel: *The New Labor Law and Protection of Workers,* op.cit, p. 747.

([13]) Nuclear Legislation in OECD and NEA Countries, *Regulatory and Institutional Framework for Nuclear Activities,* OECD 2016. Title 42 contains public health and safety laws, The Atomic Energy Act of 1954 and the Nuclear Waste Policy Act (NWPA). The Code of Federal Regulations (CFR).

([14]) "The Energy Policy Act of 2005, Public Law No. 109-58, amended the Atomic Energy Act of 1954 to permit exports of highly enriched uranium to specific countries (Canada, Belgium, France, Germany and the Netherlands) for medical isotope

We conclude from the text that there are multiple uses of nuclear energy in the United States of America. It is mainly used as a fuel for nuclear reactors, for the production of medical isotopes, and for other commercial and industrial purposes.

Second: Radiation and Pollutants in Nuclear Facilities

(A) Radiation Exposure

Nuclear energy sources have provided many services to humanity. At the same time, they are considered the greatest threat to human life, especially workers who work in facilities that use these nuclear energy sources in various fields, such as mining. Exposing these workers to the danger of these radiations causes them serious diseases; such as cancer, chronic skin, neurological and venereal diseases...etc ([15]).

Radioactive Substances, Nuclear Fuel and Equipment

According to the US Atomic Energy Act, the competent authorities, including the Environmental Protection Agency, can issue licenses to transfer, receive, possess, import or export special nuclear materials or radioactive materials. Although the legislation discusses each category separately, there are general provisions regarding any use of nuclear energy sources and radioactive materials. For example, on July 21, 1995, the Board of the Ministry of Energy issued rules on the "import and export of radioactive waste", which were then amended to regulate the export and import of nuclear equipment and materials to comply with the principles of the International Atomic Energy Agency's Code of Practice on the Transboundary Movement of Radioactive Waste. Before the amendments, these rules were primarily concerned with the importance of nuclear proliferation in light of safety standards, while the amendments increased controls on radioactive waste and required specific licenses to export or import radioactive waste, including mixed waste, and other measures to ensure nuclear safety ([16]). In addition, "The term “special

production in reactors that are either utilizing an alternative nuclear reactor fuel or have agreed to convert to an alternative nuclear reactor fuel when such fuel can be used in the reactor.42 USC 2160d".

, p.263.., op.cit*on ProgramThe Energy Employees Occupational Illness Compensati*Ken Silver:) [15](

([16]) Nuclear Legislation in OECD and NEA Countries, *Regulatory and Institutional Framework for Nuclear Activities*, OECD 2016. Title 42 contains public health and safety

nuclear material" means plutonium, uranium enriched in the isotopes 233 or 235, any other material which the NRC determines to be special nuclear material… (17)".

As for Egypt, the Egyptian legislator provided a definition of nuclear and radioactive materials. Given their danger and significant impact on the environment, the Egyptian Nuclear Law No. 7 of 2010 stipulates that: "They are uranium, or any chemical compounds of these two elements in any concentrations or quantities other than those elements and their naturally occurring compounds, as well as polonium with all its compounds."

(B) Pollution Resulting from the Use of Nuclear Energy

One of the things that accompanies the use of nuclear energy is the creation of nuclear pollution, especially in the absence of the required safety measures. The problem of nuclear or atomic energy waste is one of the most important problems that causes the pollution of the work environment, in the forms of equipment damage, fires, injuries to workers, among others (17). For example, medical uses of nuclear energy result in radioactive waste that emits Beta and Gamma rays, among others (18).

In general, radioactive pollution was known as the ability to change the natural state of the atoms of bodies (physical change), by converting them into charged atoms with an electric charge, i.e. ionizing them. Therefore, radiation was called ionizing radiation, which leads to disruption of the biological process because of radiation penetration into living organisms and its spread within the elements of the environment. The radioactive pollution of the work environment is every physical change that affects it, due to the spread of radiation or an increase in its quantity; whether this radiation is from materials used in the production process or because some means contain radioactive materials. Therefore, radioactive pollution is the most dangerous type of pollution, as it does not smell or

laws, The Atomic Energy Act of 1954 and the Nuclear Waste Policy Act (NWPA). The Code of Federal Regulations (CFR).

(17)"Atomic Energy Act. 42 USC 2073(a)-2073(c). Nuclear Non Proliferation Act (section 7 "Non-proliferation and exports"). Nuclear Legislation in OECD and NEA Countries, Regulatory and Institutional Framework for Nuclear Activities, OECD 2016. Title 42 contains public health and safety laws.

(18) Abdel-Qader Merbah: *International Law for the Security Use of Atomic Energy*, op.cit, p.19, Amer Tarraf: *Environmental Nuclear Pollution and International Relations,* op.cit, p. 122.

feel; it enters the body without warning and is not discovered until it is too late ([19]).

Impact of Nuclear Pollution on Workers (and Customers) of Nuclear Facilities

Human beings are exposed to serious risks due to nuclear contamination, especially to their health, working conditions and practicing their activities. Examples of these health risks are burns, nausea, intestinal disorders, and leukaemia, among others. They can also get external pollution. It is deposited on the skin or clothing, and acts as an internal contamination when radionuclides are inhaled, ingested, or enter the bloodstream. In addition, workers in nuclear facilities are among the most exposed to radiation. They are exposed to radiation doses that are high enough to cause severe effects such as burning of the skin or acute radiation syndrome. This may fall under the description of work injuries if strips are available ([20]).

([19]) For details, see Hamidani Muhammad: *Administrative Protection of the Work Environment from Pollution by Ionizing Radiation in Algerian Legislation*, Journal of Law for Legal and Economic Research, Faculty of Law, University of Alexandria, 2009, p. 189.

([20]) Report. 5 Nuclear Regulatory Commission, "NRC Certifies GE-Hitachi New Reactor Design," news release, September 16, 2014, www. Nrc. Gov…U.S. Court of Appeals for the District of Columbia Circuit, National Association of Regulatory Utility Commissioners v. U.S. Department of Energy, No. 11-1066, First Edition, United Nations Mine Action Service (UNMAS), USA, September 1, 2007, pp. 10-12.

Topic II. Nuclear Law and Regulation of the Use of Nuclear Radiation

First: International Regulation for the Protection of Nuclear Facilities

The International Atomic Energy Agency is one of the most important international entities that have striven to protect facilities from nuclear radiation and achieve nuclear security. It was concerned with setting international rules for the protection of facilities from radiation and the dangers of nuclear pollution. It developed a safety guide for nuclear reactors and stipulated certain conditions in a nuclear reactor that must be met, so that it can be exploited without risks, together with developing precautions for treating radioactive materials. It also laid out guidelines for monitoring and preventing radioactive pollution affecting workers, individuals and the environment, and the optimal treatment and disposal of radioactive waste. The Agency has made great efforts regarding the peaceful use of atomic energy. As the rules and data related to the handling of fissile materials and waste were developed without notification, the rules and regulations necessary for the handling of radioactive isotopes were issued in 1958, with implemented provisions, to ensure that fissile material is not used for services, equipment, facilities and data provided by it. Among the most important international agreements concluded by the agency is the convention on civil liability for nuclear damage in 1963, and its protocol in 1980([21]). Accordingly, international agreements have focused on the issue of nuclear safety and environmental protection, among their main objectives. Also, there is the position of the nuclear safety agreement, which determined that the objectives of the agreement are to preserve nuclear facilities from potential nuclear radiation risks in order to protect individuals, society and

([21]) As well as the most important international agreements concluded by the Agency: the Convention on Civil Liability for Nuclear Damage in 1963 and its Protocol in 1988, the Convention on the Prevention of Marine Pollution by Marine Pollutants and Other Things in 1956, the International Convention on Nuclear Safety of September 20, 1994, through which it called for the adoption of basic principles about Safety and security of nuclear facilities, and the Agency's member states report without delay on major accidents in order for the Agency to provide the necessary assistance in case of emergency to protect humans and the environment from atomic radiation. Abdul Sattar Younis al-Hamdouni: *Criminal Protection for the Environment,* op.cit, p. 3.

the environment from the harmful effects of ionizing radiation emanating from these facilities ([22]).

Second: The Internal Legislative Organization for the Protection of Nuclear Facilities:

The dangerous nature of nuclear facilities required special legislative rules appropriate to their nature and the gravity of their risks, especially the protection of individuals and property from exposure to them. This necessitated new legal rules to regulate the relations arising from the use of nuclear energy or the disposal of its waste, as the existing legal rules for regulating these relations proved insufficient. This prompted the legislators of many countries to regulate the said relations, through a special law, i.e. the nuclear law, the atomic law, or the Atomic Energy Law ([23]).

Nuclear law is defined as a set of rules regulating the conduct of natural and legal person's activities related to use of fissile materials, ionizing radiation and exposure to natural sources of radiation. It works to protect against the dangers of radiation associated with the peaceful use of nuclear energy and radioactive materials. This law regulates many topics, the most important of which are: nuclear facilities, transporting nuclear materials, radiation protection and radioactive sources used in medicine and industry. Therefore, the nuclear law is defined as a set of legal rules regulating the peaceful uses of nuclear energy and protection against the risks arising from it ([24]).

In the United States, the most important nuclear legislation for governing nuclear facilities is the Atomic Energy Act (1954, 42 USC 2011), which is a comprehensive federal law regulating the acquisition of the use of radioactive materials and Nuclear facilities. This does not mean that there are no other laws. In fact, there are other laws besides the Atomic Energy

([22]) For more details see Article 1 of the Nuclear Safety Agreement, 1994.

([23]) See CRS Insight. 4 Senate Committee on Appropriations, *"FY15 Subcommittee Reported Bill and Draft Report,"* July 24, 2014. U.S. Court of Appeals for the District of Columbia Circuit, National Association of Regulatory Utility Commissioners v. U.S. Department of Energy, No. 11-1066, decided November 19, 2013.

([24]) A. M. Ali and A.E. Abd El-Moniem: *The Puplic Opinion Participation in the nuclear, faeilities lieensing regime*: A Study for The Egyptian, nuclear law and other countries laws, A. M. Ali and A.E. Abd El-Moniem, *Egyptian nuclear and radiological regulatory authority (ENRRA)*, Eleventh Arab Conference on The Peaceful Uses of Atomic Energy, Republic of Sudan, 2012, pp.3-4. El-Sayed Eid Nayel: *The New Labor Law and Protection of Workers*, op.cit, p. 753. Ahmed Rashad Mahmoud Salam: *Responsibility for nuclear pollution within the framework of the rules of private international law,* op.cit, pp. 22-24.

Act for such regulation; they all work to regulate radioactive materials in facilities. States can adopt standards that are stricter than federal standards, governing the use of nuclear activities, as long as they do not violate the general rule of federal law. Under (Article 274), the state may set standards for regulating the various uses of nuclear energy under its regulatory authority ([25]).

In addition, the Egyptian legislator issued Law No. 7 of 2010 regulating nuclear and radiological activities. Egypt is one of the pioneering developing countries interested in using nuclear energy for peaceful purposes. Egyptian legislator - in accordance with Law No. 7 of 2010 regulating nuclear and radiological activities – shall address the role of the Nuclear Control Authority in its application, whether by setting licensing systems for these facilities or issuing periodic reports on the nuclear and radiological situation or the nuclear safety situation in environmental facilities and surrounding areas. From the above, we can say that the nuclear law, or the Atomic Energy Law, is devoted to both ideas of sustainable development and the treatment of pollution. It aims to preserve uranium stocks and all natural resources that are affected by radiation, in order to protect future generations. It also regulates the use of uranium, taking into account measures to preserve the nuclear environment on the one hand, and to regulate nuclear civil liability, most notably the operator's responsibility for damages to nuclear facilities, on the other hand.

Chapter II. Methods and Procedures for Nuclear Safety and Security:

The legislator -in many countries - issued the Environmental Protection Law and the Nuclear Law, in addition to regulating nuclear safety procedures and means in the Labour Law. It contributed to the establishment of what is known as nuclear safety standards in the work environment. Accordingly, the study is divided into the following:

Topic I: The Definition and Application of Nuclear Safety Standards.

Topic II: Means of Nuclear Safety.

([25]) Nuclear Legislation in OECD and NEA Countries, *Regulatory and Institutional Framework for Nuclear Activities,* Title 42 contains public health and safety laws, The Atomic Energy Act of 1954 and the Nuclear Waste Policy Act (NWPA). The Code of Federal Regulations (CFR).

Topic I. The Definition and Application of Nuclear Safety Standards:

First: Defining Nuclear Security and Safety:

(A) Defining Nuclear Security and Safety in Installations:

Undoubtedly, the availability of nuclear security for installations and their activities must be top priority. However, the means and procedures for achieving this may vary from one country to another. In this regard, Article 3 of the Egyptian Nuclear Law states: "nuclear security is to prevent, detect and respond to theft, loss, acts of sabotage, unauthorized entry, and transportation". Furthermore, nuclear security is concerned with preventing illegal and other sinful acts related to nuclear materials or other radioactive materials or their facilities, and breaches related to the security of their documents, information systems and computers. That is, nuclear safety is concerned with providing peaceful operating conditions and preventing accidents or mitigating their effects in a way that protects workers, the public and the environment from radioactive risks unexplained ([26]).

The term "nuclear safety" expresses the set of measures taken to ensure the normal operation of the nuclear facility, and to prevent accidents or reduce accidents or reduce their effects in their various stages: design, construction, commissioning, use, final shutdown, dismantling, and the Egyptian Law adopted this definition. No. 7 of 2010 in Article (3), which defines nuclear security as: "Providing operational conditions, preventing accidents and mitigating their effects in a manner that achieves protection for workers and the public from unjustified radioactive risks ([27])". The Egyptian Nuclear and Radiological Control Authority's support the

([26]) Law No. 2011 of 2017 amending some provisions of the law regulating nuclear radioactive activities promulgated by law No. 7 of 2010, Egyptian gazette in issue No. 47 bis "b" issued on November 29, 2017. John Howard and Frank Hearl: *Occupational Safety and Health*, Ph.D. thesis, Hwayne Huizenga School of Business, Nova Southeastern University, 2004, p.82.

([27]) This, and some jurisprudence distinguishes between the term "nuclear safety" and the term "nuclear security"; Where the first relates to the safety of persons, funds and environmental property from nuclear activities, while the second means all measures aimed at preventing and detecting theft and preventing sabotage, unauthorized entry, illegal transportation and hostile acts related to nuclear materials and radioactive materials or their installations. Ahmed Rashad Mahmoud Salam: *Responsibility for Nuclear Pollution,* op.cit, p.24.

nuclear security system, in a plan for the main activities related to the nuclear security infrastructure, during:
1) Identifying the main activities for building an effective and sustainable nuclear security system.
2) Providing a comprehensive framework to address national needs to strengthen the national nuclear security system.
3) Identification of the entities responsible for performing and implementing activities related to nuclear security.
4) The plan is considered as a guiding framework in accordance with the International Atomic Energy Agency in the field of nuclear security.
5) Preparing the national plan to prepare for and confront nuclear and radiological emergencies.
6) Equipping the nuclear and radiological emergency management operations room.
7) Supporting the medical preparedness system for nuclear and radiological emergencies.

(B) Definition of Nuclear Safety

Nuclear Safety is a term that means taking all possible measures to prevent nuclear and radiological accidents, and is defined by the International Atomic Energy Agency as: achieving appropriate operating conditions and preventing accidents or mitigating the effects of accidents, thus protecting workers, residents and the environment from unnecessary radiation risks ([28]). Nuclear safety standards that are more stringent are needed and six main areas for improvement have been proposed:

- Operators must plan for events outside the design rules.
- More stringent standards to protect nuclear facilities from terrorist.
- A stronger international emergency response.
- International reviews of security and safety.

([28]) Public Law 91 - 596 91st Congress, S. 2193 December 29, 1970 As amended by Public Law 101-552, §3101, November 5, 1990, the Senate and House of Representatives of the United States of America in Congress assembled, that this Act may be cited as the "Occupational Safety and Health Act of 1970." http://www.prnewswire.com/news-releases/southern-company-subsidiary-doe-finalizevogtle-nuclear-project-loan-guarantees-246395221.html. 3 See CRS Insight. 4 Senate Committee on Appropriations, "FY15 Subcommittee Reported Bill and Draft Report," July 24, 2014, http://www.appropriations.senate.gov/news/fy-2015-ew-subcommittee-reported-bill-and-draft-report. 5 Nuclear Regulatory Commission, "NRC Certifies GE-Hitachi New Reactor Design," news release, September 16, 2014.

• Binding international standards on safety and security.
• International cooperation to ensure organizational ([29]).

(C) Nuclear Safety Systems in Facilities

The three main objectives of nuclear safety ([30]):
1. Shutting down the nuclear reactor or facility if there is doubt about their danger.
2. Keeping the nuclear energy sources and radioactive materials safe and secure in the event of shutdown.
3. Preventing the release of radioactive materials during accidents to control their dangerous effects.
Therefore, the safety and security of nuclear facilities depends on the quality of maintenance and training, the competence of the operator and labour, and the rigor of regulatory oversight. For example, newer reactors are not always safer than older ones; older reactors are not necessarily more dangerous than newer reactors. A nuclear accident occurred in the United States, in 1979, with a reactor that had started operating only three months before the accident, while the Chernobyl disaster occurred two years later. So new reactor designs are developed with the aim to provide more safety and security over time. These designs contain emergency, nuclear safety and associated cooling systems ([31]).

Safety Standards Regarding the Treatment of Nuclear Pollution in the Work Environment

"Section 5: (a) each employer - (1) shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees; (2) shall comply with occupational safety and

([29]) Michel Workman: *The effects of cognitive style and communications media on commitment to telework and virtual team innovations among information systems teleworkers,* Ph.D. thesis, Georgia State University, 2000, pp.50-52.
([30]) http://www.prnewswire.com/news-releases/southern-company-subsidiary-doe-finaliz-evo -gtle -nuclear-project-loan-guarantees-246395221.html. 3 See CRS Insight. 4 Senate Committee on Appropriations, "FY15 Subcommittee Reported Bill and Draft Report," July 24, 2014, U.S. Court of Appeals for the District of Columbia Circuit, National Association of Regulatory Utility Commissioners v. U.S. Department of Energy, No. 11-1066, decided November 19, 2013.
([31]) U.S. Department of Labor: *Occupational Safety and Health Administration*, op.cit, p.22. www.osha.gov. www. cadc.uscourts .gov /internet/opinions.nsf/ 2708C01ECFE-3109F85257 C2800 53406E/$file/11-1066- 1466796.pdf.

health standards promulgated under this act, (b) each employee shall comply with occupational safety and health standards and all rules, regulations, and orders issued pursuant to this act which are applicable to his own actions and conduct([32])".

With regard to the situation of the Egyptian legislator, the labor law obligates employers to provide means for occupational safety and health in the workplace. This is to ensure the prevention of work risks and damages, such as mechanical risks natural risks, or negative risks arising from damage or danger from their lack of availability, i.e., lack of rescue and of hygiene means, nutrition…etc ([33]).

Accordingly, it is clear that the American legislator has obligated the owner of the nuclear facility - a natural person or a legal person - to observe the controls and regulating procedures in this regard, the implementation of which is monitored by the Atomic Energy Council. This gives the owner of the nuclear facility - when issuing the license - a guide to these standards to protect the resources of the nuclear environment - human and material - whether it is tools used, clothes worn, devices installed or used, among others. As for the Egyptian legislator, he/she set the general principle, which is the obligation of the owner of the facility to provide means of safety and professional security to protect the nuclear environment and its resources from potential dangers.

Ways to Prevent Contamination by Nuclear Radiation

There are preventive and curative measures and procedures that the state uses to protect the work environment in nuclear facilities. These measures are followed in the American system, as follows ([34]):

i. Monitoring facilities, their annexes, and other places that contain radioactive sources or devices that emit nuclear radiation.
ii. Take measures and procedures for nuclear safety and security within the facilities in order to ensure the establishment of an organization for the prevention of radiation accidents.

([32]) Public Law 91 - 596 91st Congress, S. 2193 December 29, 1970 As amended by Public Law 101-552, §3101, November 5, 1990, the Senate and House of Representatives of the United States of America in Congress assembled, that this Act may be cited as the "Occupational Safety and Health Act of 1970".

([33]) (Sec.3)/ Egyptian Law No. 211 of 2017 amending some provisions of the law regulating nuclear and radiological activities, promulgated by Law No. 7 of 2010, Egyptian Gazette in Issue No. 47 bis "b" issued on November 29, 2017.

([34]) Mark Holt: *Nuclear Energy Policy,* op.cit, pp.12-14. www.crs.gov.

iii. Nuclear facilities must keep a numbered and marked daily record in order to monitor the condition of the facility.
iv. Take measures to inform and notify workers who handle nuclear radiation sources.

Finally, the Safety and Security Standards in Nuclear Facilities are numerous, including ([35])

i. The facility owner takes measures to treat and remove nuclear hazards that pollute the work environment, after informing workers about them or if they discover their existence.
ii. Working on developing standards for the use and handling of hazardous materials in nuclear facilities.
iii. Providing personal protective equipment for workers, informing them about this equipment, and inspecting the extent of their commitment to using this equipment in the nuclear work environment.

Topic II. Nuclear Safety

First: The Requirement that Nuclear Facilities Obtain the Necessary Licenses

Nuclear facilities are not considered ordinary as other facilities because of its hazardous nature, resulting from the hazardous nature of nuclear materials and waste. Therefore, no nuclear facility can start operating without obtaining the necessary licenses and ensuring its safety and security of its equipment. For example, in the United States of America the Atomic Energy Board licenses all commercial nuclear power reactors before commissioning, and after ensuring the safety and security of the facilities, in accordance with the Atomic Energy Act of 1954 and the Energy Reorganization Act of 1974. In addition, the authority is delegated to the director of the office of new reactors for the issuance of specific licenses, modifications, certificates, permits and work permits (10/CFR/sec.52). For example, this council has two different methods for licensing nuclear power plants, which include issuing a permit for the

([35]) Loc.cit. Tammy McClanahan Johnson: *Factors that affect sales persons' performance in virtual environments,* Ph.D. thesis, University of Phoenix, February 2004, pp.57-58.

requirements of the nuclear power plant construction facility, followed by an operating license that allows the facilities to operate the plant ([36]).
licensing is carried out in two steps as follows: "10 CFR Part 52: licensing process through:

- Early site permits, which resolve site suitability issues, including suitability of the site for emergency preparedness and the existence of environmentally superior sites.
- Design certification rule making for specific nuclear power plant designs.

Combined licenses, which avoid the need for issuance of a construction permit and a separate operating license ([37])".

Operating License Renewal

The US Atomic Energy act permits the renewal of a nuclear facility operating license, and the procedures and requirements for such renewal and operating licenses are defined (Section/10CFR, Part 54), and a new license may be issued to nuclear facilities after the current operating license expires (10/CFR/54.31) ([38]).
While in Egypt, the Egyptian nuclear law stipulates that: "The granting of licenses and permissions stipulated in this law shall be in return for payment of the fees indicated…, fourth: ... The operating license fee for various medical radiological applications is five thousand pounds for the license granted. Fifth: personal licenses for individuals: the license fee for the individual for the period of the license granted is ten thousand pounds, and the licensing fee for the individual for various medical

([36]) "Nuclear facilities owned and operated by DOE are not subject to licensing by the NRC, except for those facilities specifically enumerated in the Energy Reorganization Act of 1974. 42 USC 5842. An explicit exclusion from NRC licensing of utilization facilities of the department of defense is contained in 42 USC 2140". The Energy Policy Act of 1992 added new sections 185(b) and 189(a)(1)(B) to the atomic energy act. nuclear legislation in OECD and NEA Countries, regulatory and institutional framework for nuclear activities, OECD 2016. Title 42 contains public health and safety laws, the atomic energy act of 1954 and the nuclear waste policy act (NWPA). The code of federal regulations (CFR).
([37]) Nuclear legislation in OECD and NEA countries, regulatory and institutional framework for nuclear activities, OECD 2016. Title 42 contains public health and safety laws, The atomic energy act of 1954 and the nuclear waste policy act (NWPA). The code of federal regulations (CFR).
([38]) NRC (2013), "The United States of America National report for the convention on nuclear safety (NUREG-1650).

radiological applications is one thousand pounds for the period of the license granted ([39]).
Thus, it is clear that the positions of the American and Egyptian regimes are identical, in terms of the requirement that nuclear facilities shall obtain licenses from the specified authorities before starting operation. This is to ensure the safety and security of the facility and to ensure the availability of nuclear safety procedures and means for facilities that use materials of a dangerous nature to this environment and the surrounding environments. Any facility must first obtain a license and then start operating. This means that it is prohibited from using any nuclear materials or disposing of nuclear waste without obtaining prior licenses.

Second: Inspection of Nuclear Facilities

Inspection is an effective way to ensure that the employer complies with the legally defined rules and procedures in the field of occupational safety and health, and obliges the employer to comply with them, voluntarily or compulsorily. It is a well-known mechanism in all legal systems ([40]).

A) Operation and Inspection for Nuclear Safety

The US atomic energy act regulates the subject of nuclear inspection and safety; it required that each operating license and license for any nuclear facility contain detailed provisions relating to safety, security and environmental protection. Then, the licensed facility is subject to a periodic inspection during the period of operation; each site has at least one inspector who devotes his/her full attention to the facility during operation. The US legislator has entrusted the inspection task to the occupational safety and health administration, which is affiliated with the Ministry of Labor. Many agencies or departments working in this field are affiliated with it; such as the environment agency, for instance. This

([39]) See Article (32) of the Egyptian Law, Law No. 211 of 2017, amending some provisions of the law regulating nuclear and radiological activities, promulgated by law no. 7 of 2010, Al-Waqa'a Al-Masryah in issue no. 47 bis "b" issued on November 29, 2017. And see also the executive regulations, Prime Minister's decision no. 1326 of 2011, issuing the executive regulations law regulating nuclear and radiological activities promulgated by law no. 7 of 2010, official gazette, no. 42 (bis), fifty-fourth year, Dhu al-Qa'dah 28, 1432 AH, corresponding to October 26, 2011 AD.
([40]) Anthony Heyes: *Implementing Environmental Regulation: Enforcement and Compliance, Department of Economics*, Royal Holloway, US, 1995, p.4.

administration exercises its oversight jurisdiction in all work environments of all kinds ([41]).

However, it exempted nuclear facilities related to national security from being inspected by the department of labor's department of labor safety and health. This does not mean that these facilities are not subject to any inspection, but rather the opposite. The task of inspection was entrusted to another party, in order to achieve national security. Many special inspections are carried out by the regional offices of the Atomic Energy Board. There are collective inspections that are dealt with by the regional offices or the headquarters of the Atomic Energy Council. The results of the inspection activities of the council are documented in the inspection reports, which reflect the focus on risk assessment and the focus on programs of corrective actions required for the safety and security systems of the nuclear facility. Furthermore, there is a set of procedures and measures available to the council. For example, it may impose civil penalties, or may request modification, suspension or revocation of licenses ([42]).

Also in Egypt, article 33/paragraph 2 of the nuclear law states: "The authority's inspectors shall have the capacity of judicial control officers in proving what is considered a violation of the provisions of this law and its

([41]) For example, the United States Council on Chemical Safety, an agency of the Occupational Safety and Health Administration, is allocated a total budget of $11 million in fiscal 2018, with an increase each year, to enable it to perform its role in inspecting and analyzing the root causes of major chemical accidents, and prevention in the future, and one of his tasks is also to work to improve conditions and understand the safety risks to workers and facilities. We also find the environment agency (one of the agencies of the department of occupational safety and health) carrying out inspection tasks and ensuring the implementation of the provisions of the law and the implementation of regulatory decisions regarding environmental protection. This agency has wide powers of inspection and entrusts the inspectors to carry out their supervisory duties in the facilities. Nuclear legislation in OECD and NEA countries, *regulatory and institutional framework for nuclear activities,* OECD 2016. Title 42 contains public health and safety laws, The Atomic Energy Act of 1954 and the Nuclear Waste Policy Act (NWPA). The code of federal regulations (CFR), congress.gov, "H.R.1309 - workplace violence prevention for health care and social service workers act," accessed April 2, 2019. Congress.gov, "H.R.1074 - Protecting America's Workers Act," accessed April 2, 2019. Congress.gov, "S.1082 - A bill to prevent discrimination and harassment in employment," accessed April 11, 2019. Anthony Heyes: *Implementing Environmental Regulation: Enforcement and Compliance,* op.cit, p.4.

([42]) Nuclear Legislation in OECD and NEA Countries, *regulatory and institutional framework for nuclear activities,* OECD 2016. Title 42 contains public health and safety laws, The Atomic Energy Act of 1954 and the Nuclear Waste Policy Act (NWPA). The Code of Federal Regulations (CFR).

executive regulations and the decisions implementing them." The legislator also obligated the ministry of manpower to establish a body to inspect facilities in the field of occupational safety, and health and work environment to ensure the effectiveness of legal texts, decisions and regulations aimed at protecting workers and their safety from risks. Yet, establishments whose work is related to national security are excluded from inspection, by the Occupational Safety and Health Authority, taking into account the nature of the work of these establishments and the confidentiality they require. Such establishments are subject to the inspection apparatus of the Ministry of Military Production, in accordance with the Prime Minister's resolution no. 982 of 2003, regarding the identification of facilities whose work is related to national security. Its first article states that: "The Ministry of Military Production shall inspect the following facilities," specifying (16) facilities, all of which are subject to the inspection body of the Ministry of Military Production ([43]).

Thus, the American and Egyptian systems have agreed on the obligation to inspect all nuclear facilities and other facilities that use or deal with radioactive materials, with a distinction between the authorities entrusted with the task of inspection. That is, they entrusted sovereign bodies with the task of inspecting nuclear facilities related to national security, and perhaps this is due to the paramount importance of these facilities that calls for maintaining the confidentiality of their equipment and information, while they assigned the regular inspection bodies to carry out their mission for the rest of the nuclear facilities.

(B) Entities Responsible for Supervising and Regulating Nuclear Activities

Environmental Protection Agency in the US System

The environmental protection agency plays a vital and important role regarding the protection and security of the environment in general, and the work environment in particular, starting with granting licenses to

([43]) The Egyptian legislator organized the inspection in the field of occupational safety and health and the work environment in chapter five of book five of labor law no. 12 of 2003, in articles 224, 225, 226, as well as article 232. See in detail law no. 2011 of 2017 amending some provisions of the law regulating nuclear radioactive activities promulgated by law No. 7 of 2010, Egyptian gazette no. 47 bis "b" issued on November 29, 2017, Egyptian Gazette No. 137, dated 06/21/2003, also see Fatima Mohamed Al-Razzaz: *Protecting the work environment and securing Safety of the Worker in Egypt,* Journal of the Union of Arab Universities for Legal Studies and Research, No. 20, 2004, p. 258.

facilities; following up on that; withdrawing the license and suspending it temporarily or permanently; developing guiding models for procedures and instructions related to occupational safety and health as well as always monitoring facilities. For example, it does the following ([44]):

i. Restricting establishments in the use of PCBs with certain controls, and restricting establishments to sales of elemental mercury...
ii. Adding five restrictions to address specific concerns for asbestos, radon, lead, among others.
iii. Providing assistance in declaring the efficiency of nuclear energy sources.
iv. Monitoring how to control unreasonable risks previously known or discovered, and monitoring the implementation of such use.

Considering the possibility of nuclear damage from the use of hazardous materials at different times: during the manufacturing, processing, transportation or disposal of waste, the import and export stages, or other stages required by the nature of the work in the facility. The US environmental protection agency expands its oversight role to include these stages; you do the following ([45]):

1) Control over manufacturing and processing…
2) Control over emissions or releases of hazardous materials.
3) Oversight on the number, duration and effects of occupationally exposed persons (nuclear plant workers).
4) Monitoring the extent of non-occupational human exposure.
5) Monitoring the similarity of the dangerous or nuclear substance in the facility to any other substance found in the general environment.
6) Monitoring the existence of data related to the environment or the health effects of nuclear and radiological materials, and information that may be obtained through nuclear tests.
7) Oversight regarding the availability of facilities and workers to conduct tests for the suitability of using dangerous substances.

([44]) (The Toxic Substances Control Act (TSCA, 15 U.S.C. 2601 ET seq). For more information, CRS Report RL33152, The National Environmental Policy Act (NEPA): *Background and Implementation, Federal Environmental Pesticide Control Act of 1972,* P.L. 92-516, Section2. Jerry H. Yen, *Analyst in Environmental Policy, Environmental Policy Section,* Resources, Science, and Industry Division, Congressional Research Service, p.55. Sven-Erik Kaiser, U.S. EPA, Office of Congressional and *Intergovernmental Relations, personal communication,* p.62, December 16, 2011.

)[45](David M. Bearden: *Environmental Laws:* Summaries of Major Statutes Administered by EPA, op.cit, pp.67-68. www.crs.gov. An explanation of EPA's "Environmental Impact Statement (EIS) Rating System Criteria" is available at http://www.epa.gov/compliance.

National Institute for Occupational Safety and Health (NIOSH)

The national institute for occupational safety and health of the US department of labor/department of energy plays a vital role in protecting and securing the nuclear work environment ([46]). Among the functions entrusted to this council are ([47]):

i. Working on developing guidelines to be followed in any facility whose workers are exposed to radiation.
ii. Determining and estimating the safe and permissible radiation doses for workers to be exposed to, and whether there is a possibility that these doses may endanger the health of workers.
iii. Allocating records and a database for workers and facilities that deal with nuclear materials.
iv. This list is published in the federal register and is updated.

Entities Responsible for Oversight and Regulation in Egyptian Law (for Nuclear Facilities)

The nuclear law stipulates: "The ministries of defense, interior, and foreign affairs, and other relevant ministries of civil aviation, transport, the Suez Canal Authority, the general intelligence service, the atomic energy authority, and other relevant authorities, each within its jurisdiction, are responsible for taking measures necessary to ensure safe handling and protection of radioactive materials, in the framework of international transport, in accordance with the provisions stipulated in the international agreements regulating the use of nuclear energy in the Arab Republic of Egypt. The nuclear law stipulates that: "The authority's inspectors shall have the capacity of judicial control officers to prove violations of the provisions of this law, its executive regulations and the decisions implementing them ([48]).

([46]) Ken Silver: *The Energy Employees Occupational Illness Compensation Program*, op.cit, pp.267-268. L David M. Bearden: *Environmental Laws: Summaries of Major Statutes Administered by EPA*, op.cit, pp.67-68.

([47]) The President Executive Order n°.13179 (65 FR 77487) December 7, 2000. And see also: Executive order 13179: Providing compensation to America's nuclear weapons workers. federal register,65(238),77487-77490. Retrieved April 15, 2005 fromhttp://frwebgate4.

([48]) See article (9/1) and article (33) of the Egyptian Law, Law No. 211 of 2017, amending some provisions of the law regulating nuclear and radiological activities, promulgated by Law No. 7 of 2010, The Egyptian Gazette in Issue No. 47 bis "b" issued in 29, 2017.

C) Nuclear and Radiological Regulatory Authority and its Environmental Role

The nuclear and radiological control authority was established - as an independent body enjoying legal personality and with complete independence despite its affiliation with the council of ministers - in accordance with article (11) of the law regulating nuclear and radiological activities promulgated by law no. 7 of 2010. Law entrusts it entrusted with carrying out all regulatory work and supervisory tasks for all nuclear and radiological activities for the peaceful uses of atomic energy to ensure the safety of humans, property and the environment from the dangers of exposure to ionizing radiation. For example:
1- Issuing, amending, suspending, renewing, withdrawing and canceling all types of licenses for nuclear and radiological facilities and activities and personal licenses for those dealing with ionizing radiation in accordance with the law.
2- Coordination with other governmental and non-governmental agencies in the areas of the commission's work. 3- Contacting the regulatory and supervisory authorities in foreign countries and international organizations to enhance cooperation and exchange of regulatory and supervisory tasks.
4- Inspection of sites where or through which products or services directly related to safety is supplied, in accordance with the regulations in force in this regard.

D) Administrative Sanctions for Nuclear Facilities Violation of Nuclear Safety and Security Rules and Measures

There are administrative sanctions that are applied to the violations of the nuclear safety and security rules and measures of these facilities:
1- Withdrawal or suspension of the nuclear facility's license. There is no doubt that the administrative authority has the right to withdraw the license granted to the nuclear facility or suspend it, when necessary, depending on whether it has committed violations in the application of the provisions of the nuclear Law or nuclear safety and security measures. It is the right of the licensing body to issue a decision to cancel the license. In the event that a source of nuclear radiation is used and in violation of the law, the license can be withdrawn and the relevant authorities shall be notified, in order to issue a suspension of the activity. The administrative authority may also temporarily suspend the license for committing any of the aforementioned violations.

2- Administrative fine: it is a sum of money imposed by the competent department on the perpetrator of the environmental violation. By law, the perpetrator is obligated to pay the fine. This fine is easy to impose. It applies to those who violate the nuclear safety and security rules and measures in nuclear facilities
3- Seizing the dangerous tool: preventing its use or confiscating it. It is a provision that is approved by many countries in order to suppress the dangerous tool, i.e. the source of nuclear pollution. Thus, the competent department, in the event of pollution resulting from the lack of secrecy of the radioactive nuclear source, removes the dangerous tool and confiscates it.

Section II. Nuclear Accident in Facilities and Compensation for Nuclear Accident

Among the most important risks that threaten the security of installations are those resulting from nuclear accidents. This is due to the negative effects they leave behind on the work environment, including the material and human resources. These effects are not limited to the work environment only, but they extend to its neighbors from other environments. Additionally, when the nuclear accident is on a small scale, in contrast to the accident on a large scale, its harmful effects may extend to other neighbouring countries ([49]). This section is divided into the following:
Chapter I: The Nature of the Nuclear Accident.
Chapter II: Compensation for the Nuclear Accident.

Chapter I. The Nuclear Accident Concept

The nuclear accident has its own nature, which gives it a special character. This is because of its dangerous effects on people, workers of nuclear facilities or others, such as facility customers, or other persons outside the facility's scope. Moreover, the nuclear accident may affect production tools and equipment in nuclear facilities. Accordingly, the study is divided into the following:
Topic I: Definition of the Nuclear Accident.
Topic II: Nuclear Damage.

([49]) Ken Silver: *The Energy Employees Occupational Illness Compensation Program,* op.cit, p.262.

Topic I. Definition of the Nuclear Accident

First: Defining the Nuclear Accident and Its Related Terms

A nuclear accident has several definitions. In the US Law, the Price-Anderson act, 42 USC 2014q. defines a "nuclear accident" as any occurrence, including an extraordinary nuclear occurrence, within the United States, causing, within or outside the United States, bodily injury, sickness, disease, or death, or loss of or damage to property, or loss of use of property, arising out of or resulting from the radioactive, toxic, explosive, or other hazardous properties of special nuclear source, or by-product material. The Price-Anderson act was amended in 1966 to introduce the concept of an "extraordinary nuclear occurrence", in order to strengthen the protection of the public by eliminating, in appropriate circumstances, certain legal defenses that would normally be available under state tort laws. An extraordinary nuclear occurrence is essentially an event causing off-site significant release of nuclear material or significant increase in radiation levels, and in respect of which the federal government determines that there has been, or will be, substantial damage to persons or property. Any determination by the NRC or the secretary of energy, in this respect, is final and conclusive. The elimination of the specified defenses effectively results in strict liability. An extraordinary nuclear occurrence determination can also preclude the use against a claimant of any issue or defense based on state statute of limitations, if the claim was brought within three years from the date on which the claimant first knew, or should reasonably have known, of this injury or damage and the cause ([50]).

In addition, the Egyptian legislator mentioned that the nuclear accident - in nuclear law 7/2010 in article 1, paragraph 8 - is "The accident, disaster, or series of accidents whose causes are due to a single origin and result in an unregulated leakage of nuclear radiation that results in nuclear damage." Whereas the 1963 Vienna convention (M1) defined a nuclear accident as "every act or series of actions arising from the same source and resulting in nuclear damage." As for the Paris convention (M1), a nuclear accident is defined as "every act or series of actions resulting from radioactive or radioactive explosive and toxic materials or from any

([50]) Nuclear Legislation in OECD and *NEA Countries, Regulatory and Institutional Framework for Nuclear Activities,* OECD 2016. Title 42 contains public health and safety laws, the atomic energy act of 1954 and the nuclear waste policy act (NWPA). The code of federal regulations (CFR).

dangerous materials from nuclear fuel, products, waste or radiation and resulting in damage".

We deduce from the previous definitions that the act must be caused by nuclear materials, which are used or transferred to the account of a nuclear workplace. The common feature of most nuclear accidents is that they are caused by radioactive nuclear materials or dangerous materials from nuclear fuel or nuclear waste. Thus, the term "nuclear" is associated with any substance or product that causes the nuclear accident. The construction or operation of nuclear reactors, in the production of nuclear fuel and during the operation of a nuclear reactor, may also be associated with nuclear contamination. Water is used in large quantities to cool nuclear reactors, and then these quantities are thrown into the seas or rivers, which leads to their contamination with radioactive materials. That is, the environment in which this reactor is used, or the surrounding environments, may be affected by radioactive materials ([51]). If this environmental damage drains material resources, then it is not more susceptible to be protected from the harm caused to workers because of nuclear accidents ([52]).

([51]) For more information see NEA (2018), "Decree no 2017-508 of 8 April 2017 revoking the licence to operate nuclear power plants", Nuclear Law Bulletin, No. 100,2009, p.93. National environmental policy act of 1969, 42 united states code (USC) 4321 et seq. (NEPA), Oglala Sioux Tribe v. US Nuclear Regulatory Commission, 896 F.3d 520 (DC Cir. 2018) Nuclear Law Bulletin N°. 101, Volume 2018/2, Legal Affairs 2018, p. 71.

)[52](Nuclear tests are explosions that take place above the ground, and they result in large quantities of radioactive dust loaded with fission products, and spread in the atmosphere of the areas where these experiments are conducted, and due to the wind, radioactive dust falls and pollutes the water. As for the explosions that take place under the surface of the earth, some nuclear radiation leaks into the groundwater, and it also contains a large number of radioactive isotopes (uranium elements). As for nuclear reactors, they are dangerous and destructive radiation for human health, animals, plants and the environment in particular. It detrimentally affects the environment and its life with the possibility of radioactive contamination for subsequent generations of humans. Nuclear waste is a material that contains some radioactive isotopes resulting from the use of nuclear energy, which is classified as dangerous waste in view of its gravity and the consequent damage. Radioactive or nuclear waste is generated at all stages of the nuclear fuel cycle and the majority of waste is produced at the beginning of the cycle, which includes mining, fuel processing time, and when water and impurities are discharge. Therefore, it is considered radiation at the end of the cycle, which usually includes operating reactors, burying waste in deep spaces under the surface of the earth, or disposing of it by or at sea by ships and industrial facilities that are considered a dangerous source of dumping them. See: David M. Bearden: *Environmental Laws:* Summaries of Major Statutes Administered by the Environmental Protection Agency, op.cit, p.10, OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970, [As

Second: Forms of the Nuclear Accident

Failure of Nuclear Power Plants

There are concerns that human or mechanical error in any nuclear facility could lead to significant harm to people and the environment. Nuclear power plants and operating nuclear reactors contain large amounts of radioactive fission products that can pose a direct radioactive hazard if dispersed, contaminating soil and plants, and ingested by humans and animals. Human exposure to workers and others in surrounding environments at sufficiently high levels can cause short-term illness and long-term death from cancer and other diseases. In addition, it is impossible for a nuclear reactor to explode like a nuclear bomb. Nuclear reactors can also fail in a variety of ways. If the instability of the nuclear material causes unexpected behavior, it can lead to an uncontrolled discharge of energy. Normally the reactor's cooling system is designed to be able to handle excess heat. However, if the reactor experiences a loss of coolant it could lead to overheating and this event is called a nuclear meltdown ([53]).

Routine Emissions of Radioactive Materials (the Subjective Nature of the Use of Nuclear and Radioactive Materials)

The nuclear industry has an excellent safety record and deaths per megawatt-hour, which is the lowest of all major energy sources. The past six decades have shown that nuclear technology does not tolerate error. Yet, nuclear power is perhaps the prime example of so-called "high-risk technologies" because "no matter how effective conventional safety devices are, there are some kinds of inevitable accidents, which are 'normal to the system'". That is, there is no escape from system failure and the possibility of catastrophic accidents and their consequent

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Amended Through P.L. 109–236, Enacted June 15, 2006], [Public Law 91–596, December 29, 1970], As Amended Through P.L. 109-236, Enacted June 15, 2006, February 27, 2018. www.crs.gov. Muhammad Nasr Al-Din Mansour: *Ensuring Compensation for the Injured Between the Rules of Individual Responsibility and Considerations of Social Solidarity,* first Edition, Dar Al-Nahda Al-Arabiya, 2001, p. 290.

([53]) David M. Bearden: *Environmental Laws: Summaries of Major Statutes Administered by the Environmental Protection Agency,* op.cit, p.10, OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970, [As Amended Through P.L. 109–236, Enacted June 15, 2006], [Public Law 91–596, December 29, 1970], As Amended Through P.L. 109-236, Enacted June 15, 2006, February 27, 2018.

economic costs, which must be taken into account when setting nuclear policy and regulations. The Chernobyl disaster was a nuclear accident that occurred on April 26, 1986, at the Chernobyl nuclear power plant in Ukraine. An explosion and fire released large amounts of radioactive contamination into the atmosphere that spread throughout most of the western Soviet Union and Europe. It is considered the worst nuclear power plant accident in history and is one of only two classified at level 7 on the international table of nuclear events (the other is The Fukushima nuclear disaster, the accident raised concerns about the safety of the nuclear power industry, slowing its expansion for a number of years **([54])**.

Accidents Caused by Radiation

A radiation accident is defined as any unintended event including operating errors, equipment failures or other mishaps whose actual or potential consequences cannot be ignored from the point of view of prevention or safety, and could lead to potential exposure or to unusual exposure conditions. Statistics have shown that radiation accidents have various causes, as follows ([55]):

We can say that these accidents have revealed the gravity and seriousness of nuclear accidents, which necessitates a review of the treatment of many dangers by regulatory means, especially with regard to inspection and control. Nuclear accidents have confirmed that the radioactive nuclear pollution of the environment does not know the geographical boundaries of facilities, but also of countries; no facility or any country alone can be certain that all safety and security measures are taken, nor is it certain of its ability to provide the desired protection for both human and material resources.

Topic II. Nuclear Damage

First: The Concept of Nuclear Environmental Damage

The Nuclear damage is defined as loss to persons or any loss or damage to property arising out of or resulting from radiation exposure,

([54]) Mark Holt: *Nuclear Energy Policy,* op.cit, pp.8-10. Bagley S. Biklen: *The beryllium "double standard" standard,* op.cit, p.769.
([55]) Suzan Moawad Ghoneim, *International Legal Systems to Ensure the Use of Nuclear Energy for Peaceful Purposes,* New University House, 2011, p. 677.

radioactive, toxic, explosive effects, or other dangerous properties of nuclear material or radioactive waste produced in any nuclear facility or dispatched from or to it ([56]). We can define nuclear damage as the loss or damage that affects a person or his/her money and is the result of violations or nuclear radiation. Perhaps the nuclear environmental damage is characterized by a subjectivity that distinguishes it from others, and the most prominent features of this subjectivity are ([57]):

- The danger that appears to individuals: this reflects the danger of nuclear radiation or nuclear waste and waste itself.
- Its danger to the facilities and their material resources, as well as to the general environment: as the nuclear damage resulting from nuclear materials or waste has a seriousness that threatens the work environment and the surrounding environments.
- Its lingering effects: as the effects of nuclear environmental damage may not appear immediately after its occurrence; rather, its effects may be slackened later for a period of up to several years.
- Widening of its range: the environmental damage is extensive; it does not stop at the borders of the facility or the country in which the accident occurred. A nuclear accident in an atomic facility that will not only affect its workers, but also extend to other individuals, and the range may expand in favorable weather conditions to extend beyond workers and surrounding people.

Therefore, we can say that nuclear damage is not limited to nuclear facilities only, but also extends to neighboring environments. For example, the immune system of an infected individual is greatly affected by exposure to nuclear radiation and dealing with it. Eventually, many individuals developed lung diseases compatible with chronic beryllium disease, and their diagnosis proved this. The families of many workers also demanded compensation in cases where the worker died, in January 1993 – the date of exposure to radioactive beryllium in places affiliated with the Ministry of Energy([58]) .

([56]) C. Stoiber et autres, *Manuel de droit nucléaire,* agence internationale de l'energie atomique, Vienne, 2006, p. 121. Mark Holt: Nuclear Energy Policy, op.cit, p.8. Ahmed Rashad Mahmoud Salam: *Responsibility for Nuclear Pollution,* op.cit, p. 62.
([57]) Loc.cit.
([58]) Ken Silver: *The Energy Employees Occupational Illness Compensation,* op.cit, p. 276.

Second: Nuclear Damage to People

Nuclear damage may badly affect people. In other words, the biological effects on humans, caused by exposure to radiation cause harm to living cells. For example, exposure to radiation can hinder the processes of cell division, disrupting its function, or changing the structure of genes around reproductive cells. Moreover, exposure to X-rays causes hair loss and redness of the skin. Cases of lung cancer appeared among uranium and cobalt miners. The workers in the fields of nuclear radiation suffered from severe burns and leukemia, and the rate of differentiated cancers increased among workers who use radioactive materials, e.g. workers in chemical factories, watches and glass products, among others ([59]).

Since nuclear damages are serious and extensive, the American Energy Employees Occupational Illness Compensation act has given examples of what negative effects nuclear damages may have. These negative effects include but are not limited to total or partial disability, permanent loss or loss of function of body parts, damage to lungs (i.e. black lung), as well as any diseases related to exposure to radiation or other toxic substances ([60]).

We conclude from this legislative treatment of the American law - which the Egyptian law lacks - that the law guarantees compensation to the person suffering nuclear damage in most cases without requiring that the nuclear damage be included in occupational diseases. It is sufficient for a medical committee to decide that the damage is nuclear damage resulting from radiation or toxic substances or something else, and it is desirable for the Egyptian legislator to follow the American law in terms of deciding the principle of compensation for all occupational damages and not requiring such diseases to be included in the occupational diseases table.

Accordingly, the work environment has become a fertile field for human resources to be exposed to the dangers of pollutants, which makes them vulnerable to many physical damages ([61]):

Physical damages are damages to the human body, and their effects appear on workers, early or late. The criterion for distinguishing here between the two types of damage is the time factor. Thus, if the period between radiation exposure and the appearance of symptoms of infection

([59]) El-Sayed Eid Nayel: *The New Labor Law and Protection of Workers,* op.cit, pp. 767-768.

([60]) Energy (DOE): *Its contractor, or subcontractor facilities*, the Act was passed on October 30, 2000, and became effective on July 31, 2001. The Department of Labor (DOL) manages claims filed under the Act.

([61]) Mark Holt: *Nuclear Energy Policy,* op.cit, pp.8-10.

was short, then, the damage was immediate. However, if this period was prolonged, the damage was delayed or indolent. The difference between the two types of damage lies in the latency or incubation period. In other words, it is the period during which the radiation lies within the cell, as it is the period of conflict between the body's natural immunity and the harmful effect of radiation, which may be immediate or lingering damage ([62]).

Damage resulting from acute exposure (immediate damage) occurs if the worker is exposed in the work environment to ionizing radiation, whatever its source, and on one time. It also leads to bad damage, most notably the death of the worker, which may be in several minutes or seconds. Examples of such damages include skin injuries such as redness or darkening, atrophy of brain cells and bone marrow cells, which are highly sensitive to nuclear radiation. Additionally, injury to the digestive system can be caused by exposure to a very strong radiation dose, which causes death within minutes, hours, or days. We also seek here intestinal pain, which appears in the form of nausea, dizziness, severe diarrhoea and bleeding, because of circulatory imbalance and blood contamination, so that the main centre of the nerves of the affected person is affected. Other diseases of the reproductive organs, such as infertility, are also detected ([63]).

As for the damages resulting from the chronic exposure (i.e. the indolent damage resulting from the accumulation of radiation during the service life), these are considered the most prevalent among workers in work environments, in which radioactive and nuclear materials are used, and radioactive contamination appears. The latter is expected in such environment. Irrespective of how small and ineffective the radiation level in the work environment is the worker's continuous exposure to radiation inside this environment during his/her work period is expected. As a result, the amount of radiation accumulates in the worker's body, which ultimately leads to biological/physical damages to the worker, even after a long period from the date of his/her first exposure to radiation, in the form of multiple diseases. Examples of these damages include leukemia, blindness, lung cancer, breast cancer, bone cancer, and liver cancer. Apart from the damage that may befall the workers themselves due to their

([62]) Saeed Saad Abdel Salam: *The problem of compensation for technological damages,* Dar Al-Nahda Al-Arabiya, p. 59, *Hamidani Muhammad: Administrative protection of the work environment from pollution by ionizing radiation,* op.cit, p. 190.

([63]) El-Sayed Eid Nayel: *The New Labor Law and Protection of Workers from the Risks of the Work Environment,* op.cit, p. 771.

handling of radioactive materials, there are other damages that not only affect them, but also affect others (64).

Third: Nuclear Damage to Things (Money)

The work environment, like other environments, contains material resources in addition to its human resources. Therefore, the environmental damage extends in its scope to affect the two types of resources of this environment. That is, human resources and material (things) together. The exposure of entities to doses of nuclear radiation greater than the permissible limit results in great damage, whether these entities are real estate or movables. The gravity of the damage to entities depends on the size of the radiation dose, the degree of sensitivity of the substance of the entity to radiation, and the type of substance. For example, metals are the least affected by nuclear damage (65).
Examples of nuclear damage to objects include complete deterioration and destruction of production materials, equipment and tools and damage to petroleum products and raw materials. The entity may remain intact but it absorbs nuclear radiation, is unusable and constitutes a source of danger. It has to be noted that removing radioactive contamination from entities requires great experience and mechanisms that take a long time and heavy expenses, which exceed the value of the entity itself (66).

(64) Genetic damage; which means the damage that is reflected or returned to subsequent generations, as a result of each damage or prejudice to the genes that carry the hereditary characteristics of any of the parents. These damages may appear in the form of infertility. Saeed Saad Abdel Salam: *The problem of compensation for technological damages*, op.cit, p. 59, Hamidani Muhammad: *Administrative protection of the work environment from pollution by ionizing radiation*, op.cit, p. 190.
(65) Mark Holt: *Nuclear Energy Policy*, op.cit, pp.8-10. www.crs.gov.
(66) The damage that must be compensated includes the loss of things, as radioactive pollution leads to them becoming temporarily or permanently unusable or permanent, despite their ostensible survival of their characteristics and material components in certain cases. The compensation is the value of the damaged thing on the day of the accident or the cost of purifying it from pollution and returning it to the state it was in before the pollution, although this cost is often greater than the value of the damaged thing itself. El-Sayed Eid Nayel: *The New Labor Law and Protection of Workers from the Risks of the Work Environment,* op.cit, p. 784. Report: Department of Energy, No. 11-1066, decided November 19, 2013, www. cadc. Us courts.gov...

Topic II. Compensation for a Nuclear Accident

If we dealt with the procedures and rules related to the safety and security of nuclear facilities, and the effects of the nuclear accident on the human resources of the facility and its workers, causing them nuclear damage, then this necessitates addressing compensation for the nuclear accident. If the injury is covered according to the Social Insurance Law, the injured has social compensation - as it is a work injury - in addition to recourse to the person who caused the damage with complementary civil compensation, but if the injury is not covered by social compensation and the injury is nuclear, the injured may recourse under special provisions for civil liability or what is known exceptional nuclear responsibility.

First: The Extent to which a Nuclear Accident is considered a Work Injury and Compensation for it

Workers for nuclear damage international conventions took care of this matter in order to ensure that the injured obtains his/her right.

International Regulation of Worker Compensation for Nuclear Damage

There are obvious international efforts to provide security and protection for workers, from the damages of a nuclear accident. The international convention on civil liability for nuclear damage was keen to remove and prevent any conflict between the social security system and the compulsory nuclear security. In accordance with its provisions, it referred to the social security law of each of its member states to determine the rights of social security beneficiaries and the rights of recourse that the social security workplace can exercise against the nuclear operator. Article 6 of the Paris convention states: "If compensation for damage provokes the application of a national system of medical or social security or compensation for work injuries and occupational diseases, the rights of the beneficiaries of this system and the rights of recourse that can be exercised against the operator are regulated, according to the law of the state party or the regulations of the government body that established the system ([67]).

([67]) Article (9/1) of the Vienna convention states: "without prejudice to the provisions of this convention, if the provisions of the national or general health insurance systems, social insurance, social security, workers' compensation or occupational disease

Accordingly, the insured worker who suffers from nuclear damage has the right to two compensations: compensation for work injuries, the provisions of which are regulated by the social security law, and civil compensation, if its conditions are met.

(A) Social Compensation: (Internal Organization of Compensation for Injury under the Social Security Law)

The social security law guarantees the insured a social compensation in the event that he/she sustains a physical injury from the injuries he/she specified, and this injury is related to work, at the same time the injury has negative repercussions on the worker's ability to work temporarily or permanently. If the injury can appear in several forms, a work accident, a road accident, an occupational disease or stress and exhaustion; the nature of the injury to nuclear damage may not take all these forms, which calls for addressing firstly: the nature of the injury to nuclear damage, and secondly: the limits of social compensation, as:

(1) Nature of Nuclear Damage

For the sake of social compensation for a nuclear injury, it is necessary to determine the nature of this injury in light of the provisions on work injuries. Compensation for a nuclear injury requires determining the nature of this injury, in light of the provisions of work injury security. Is it a work accident or an occupational disease? undoubtedly, considering the injury suffered by nuclear workers (who are exposed to atomic radiation) as occupational diseases makes it much easier for these workers to obtain compensation, even if it is a specific social compensation in a lump sum, but it does not require proof from the workers ([68]).

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compensation include compensation for nuclear damages. The laws of the contracting party from which these systems are in effect or the regulations of the government agencies that established these systems determine the eligibility of the beneficiaries of these systems to obtain compensation determined by this agreement and to have recourse under these systems to the operator.

See CRS Insight. 4 Senate Committee on Appropriations, "FY15 Subcommittee Reported Bill and Draft Report," July 24, 2014, http://www.appropriations.senate.gov/news/fy-2015-ew-subcommittee-reported-bill-and-draft-report. 5 Nuclear Regulatory Commission, "NRC Certifies GE-Hitachi New Reactor Design," news release, September 16, 2014, http://www.nrc.gov/reading-rm/doc-collections/news/2014/.

([68]) Mark Holt: *Nuclear Energy Policy,* op.cit, pp.8-10. www.crs.gov.

Thus, conditioning the injury as a work injury ensures its social coverage. If it resulted from an accident, and the worker practiced a specific profession and if the disease is one of the diseases witnessed by work relations, this leads to the sufficiency of the requirement that the act be sudden, distinguishing between a work accident and an occupational disease. If the accident is like this, then this condition will definitely be fulfilled ([69]).

Moreover, the nuclear damage can arise from a work accident as well as from an occupational disease, according to the time taken by the act causing it. The injured worker shall be compensated for the nuclear accident as a work accident. This compensation occurs when, for instance, a defect occurs in the radioactive source used in the facility, and this occurred during the worker's work or because of work, causing wounds or injuries to the worker's body, thus constituting an attack on the physical integrity of the human being (in terms of health, both physical and nervous). The injury is compensated as an occupational disease, when the worker is exposed to nuclear radiation and suffers from a nuclear damage that gradually forms because of the accumulation property inside his/her body. The worker is compensated if this disease is one of the diseases listed in Table No. 1, accompanying the law, and if the worker is practicing one of the professions that cause this disease according to the table - and proves this as matter of fact that can be proven by all means. – This is in addition to the appearance of symptoms of the disease during the establishment of the work relationship, or within a calendar year from the date of the worker's termination of service. This condition is derived from the text of the law.

As for the American system, it depends on the method of comprehensive coverage of occupational diseases. This does not mean that it does not require any conditions regarding compensation. A causal relationship between the worker's disease and the occupation he/she performs must exist. That is, this disease should be related to the occupation, and the occupation is the cause of its infliction on the worker. This is regardless to whether this disease is one of the traditional diseases that all workers are exposed to, or one of various diseases that have emerged among some

([69]) For details see: Muhammad Hussein Mansour: *Social Insurance,* Mansha'at al-Maaref, Alexandria, N.d, p. 213, Samir Abdel-Sayed Tanago: *Social Insurance System,* Manshayat Al-Maaref, Alexandria, without publication year, Ola Farouk Salah Azzam: *Explanation of the new Egyptian Social Security Law,* No. 148 of 2019, a comparative study between the American and French laws, 2020, A.D., Arab Renaissance House, p. 77.

workers, such as repetitive stress and pressure diseases and diseases of the spine ([70]).

By comparing the position of the American and Egyptian laws regarding social compensation for nuclear work injury, we find the superiority of the first over the second in regulating this issue. As this injury is considered an occupational disease, it is compensated according to the comprehensive coverage system when it is proven by a medical report that it is related to the profession, while the Egyptian law stipulated that this injury should be included in the list of occupational diseases and also stipulated that it be related to the profession. In American law, the criterion is in the extent to which the disease is related to the profession the worker performs, according to the medical report and not the open table, which often lacks the organization of these diseases. Therefore, it is recommended that the Egyptian legislator follow the American legislator's method and take the comprehensive coverage method for social compensation for nuclear damage as a work injury.

Although the American system has adopted the method of comprehensive coverage in compensation for diseases, so that every disease whose occupational origin is proven by a medical report is compensated. However, regardless of whether this disease is recognized or not, the US Congress still aims to overcome the lack of uniformity between state employee compensation programs for occupational diseases and other programs. This is particularly a controversial problem that concerns atomic workers in rural areas (where some of the largest weapons Facilities are located). This has been resolved since October 2000. It created standardized federal regulations for nuclear radiation-related cancer and chronic beryllium disease, under which are workers who deal directly with atomic radiation, contractors who deal with government-owned nuclear weapons facilities, and some employees of large companies in industry and construction that use nuclear energy benefit, including employees at nuclear weapons laboratories ([71]).

([70]) Mark Holt: *Nuclear Energy Policy,* op.cit, pp.8-10. www.crs.gov. Andrew M. Robinson and others: *The contemporary British workplace,* op.cit, pp.90-92, Sandi Mann and others: op. cit, p. 669. (The trial court: In lavish V. Cerber Electronics,). Jalal Muhammad Ibrahim and others: *Explanation of the Labor and Social Security Law,* d.n., d.t., p. 635, *Hussam al-Din al-Alwani: Explanation of the Social Security Law,* d.n., 2006, p. 157. Ahmed Hassan Al-Borai: *Al-Wajeez in Social Law, Labor and Social Security Law,* op.cit, p. 143.

([71]) Ken Silver: *The Energy Employees Occupational Illness Compensation Program*, A New Legislation to Compensate Affected Employees, MOHN JOURNAL, VOL.53, NO.6, JUNE 2005, pp.268-269.www..dol.gov/esa/regs/compliance/owcp/eeoicp/Statistics/Statistics.htm.

(2) Limits of Social Compensation

Social compensation is considered arbitrary legal compensation. The legislator drew the features of social compensation and set a standard for, which revolves around the wage and injury and the resulting effects. This compensation is determined haphazardly in a predetermined way, linked to the security contribution wage; therefore, the only element of damage covered by this compensation is the negative repercussions of the injury on the income. The judge does not have a discretionary power about it, in contrast to the civil compensation; the latter covers all the elements of damage and the judge has discretion in it. Social compensation has two forms, the first: compensation in kind, which consists in treatment and medical care, i.e. caring for and treating the injured until he makes a full recovery or his/her condition is stabilized. The second is financial compensation; it is the monetary compensation, i.e. the wage compensation paid to the insured during the period of treatment and medical care before his/her condition is stabilized, and compensation for the injury if the condition of the injured is stabilized and there is no permanent disability or death ([72]).

Accordingly, the social compensation for nuclear injuries in the Egyptian system is estimated arbitrarily and faces the negative repercussions of the work injury on the worker's ability to earn. In contrast to the divergent situation in the American system, the social security law establishes adequate compensation covering all elements of damage suffered by workers who contracted certain diseases. The compensation for occupational diseases act provides for arbitrary compensation for energy employees: the text: "The Energy Employees Occupational Illness Compensation act is a compensation program that provides a lump-sum payment of $150,000 and prospective medical benefits to employees of the department of energy and its contractors and subcontractors as a result of cancer caused by exposure to radiation, or certain illnesses caused by exposure to beryllium or silica, as well as for payment of a lump-sum of $50,000 and prospective medical benefits to individuals under section 5 of the Radiation Exposure Compensation Act ([73])".

([72]) For details, see Hassan Abdel Rahman Quddus: *Compensation for Work Injury,* Dar Al-Jamaa Al-Jadida, 2000, pp. 361-362.

([73]) National Defense Authorization Act for Fiscal Year 2002 (Public Law 107-107; Section 3151(b)) and the Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005. https://www.cdc.gov/niosh/ocas/ocaseeoi.html.

By comparing the situation in the American and Egyptian systems regarding social compensation for nuclear injuries, we find that the two systems agree that this compensation is estimated arbitrarily in the social insurance law. Insurance paid by the social insurance authority. However, the two systems differed in this specific compensation; As the American law has set it at an amount that often covers all or most of the elements of the damage, and this legislator did well, while the Egyptian legislator specified it with compensation that covers only some elements of the damage and depends on social insurance contributions, which are simple and limited and vary in different cases.

(3) Inadequacy of Traditional Rules of Social Law (Recourse to Civil Liability Rules to Compensate the Injured)

Given the special nature of nuclear damage, the traditional rules of social law are in turn insufficient to provide adequate reparative protection for the injured person. Because of the gravity and seriousness of the nuclear damage and the difficulty of ascertaining whether the damage was caused by nuclear waste or nuclear radiation on the one hand, it is difficult to prove the nuclear damage, and even if proven, the injured worker receives arbitrary social compensation, which is specific and non-abrasive for all elements of nuclear damage (74).

In view of the insufficiency of the traditional rules for compensating the victims and the injured, it was necessary to adopt a special system for this compensation that faces that imminent danger, which results in harm that has its own character. These traditional rules are not sufficient to counteract that kind of harm from a preventive and legislative standpoint, especially the rules of social law that set a lump sum for workers' compensation for nuclear damage. In addition, if the rules of civil law allow the injured to obtain arbitrary indefinite compensation, at the same time, they require proof of error, damage and causation, for example. Furthermore, if the nuclear reactor has caused a leak, its guard must prove that the damage resulted from a foreign cause, force majeure, or a mistake from the injured or from others (75).

(74) Ken Silver: *The Energy Employees Occupational Illness Compensation Program,* op.cit, pp.270-271.

(75) In fact, many allegations of cancer were made by workers at a facility where nuclear radiation was used as well as employees, accountants and secretaries who worked near or passed through radiation work areas, demanding compensation for the disease. The workers of the facility were compensated for an occupational disease; because they are considered atomic workers. As for the others referred to, they were not compensated for

(B) Complementary Compensation in Accordance with the Provisions of Civil Liability in the Field of Nuclear Damage

(1) Workers' Compensation According to the General Rules for Supplementary Compensation in Civil Liability

The general principle is that if the social compensation does not compensate for all the elements of the damage, then the injured person has the right to recourse to the one who caused the damage with complementary compensation, in order to make up for the full damage. If the injury was a nuclear work injury, the injured may claim supplementary civil compensation from the person responsible for compensating this nuclear damage. That is, the damage was caused by an act constituting a nuclear accident by the use of nuclear material ([76]).

The Rule in Combining the Two Compensations (Social and Civil)

According to the general principle, a person may not be compensated twice for the same damage, and the person responsible for the occurrence of the damage may not evade paying part of the compensation, but the injured person has the right to the full compensation that compels the damage. If the injured is an insured worker, in accordance with the work injury security, he/she is entitled to the arbitrary compensation stipulated in the social security Law. That is, the injured is entitled to "social compensation". The supplementary compensation - it means the financial value that represents the difference between the arbitrary compensation obtained by the injured worker from the Social Security Authority and the full compensation according to the rules of civil liability - recourse takes place in accordance with the rules of civil liability, which based on the complementary compensation system guaranteed by the rules of civil liability, if certain conditions are met. The most important of such

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their cancer; if they could not prove that radiation exposure from this facility caused their injury.
http://www.prnewswire.com/news-releases/southern-company-subsidiary-doe-finalize-vogtle-nuclear-project-loan-guarantees-246395221.html. 3 See CRS Insight. 4 Senate Committee on Appropriations, "FY15 Subcommittee Reported Bill and Draft Report," July 24, 2014, http://www.appropriations.senate.gov/news/fy-2015-ew-subcommittee-reported-bill-anddraft-report. 5…

([76]) Nuclear Regulatory Commission, "NRC Certifies GE-Hitachi New Reactor Design," news release, September 16, 2014, http://www.nrc.gov/reading-rm/doc-collections/news/2014/.

conditions is that the nuclear damage was caused by a nuclear accident that constitutes a work injury ([77]). Thus, the insured worker who suffers nuclear damage has the right to social compensation for work injuries, and civil compensation under the special exceptional scheme of nuclear liability, or according to the general rules of civil liability depending on the type of compensation ([78]).

In the Egyptian system, which regulates two types of compensation; The first is social compensation under the social insurance law, which is considered arbitrary and insufficient specific compensation, as well as supplementary compensation, which is compensation under the civil law that covers all elements of damage, and the victim returns to this compensation if his injury is a work injury; the injured person begins with social compensation and then completes it with civil compensation until he covers all the elements of his damage. In contrast to the situation in the American system, according to which the social security act covers all or most of the elements of the damage, although it is predetermined, and the injured is entitled to it if his condition is considered a work injury.

(2) Estimation of Civil Compensation for Nuclear Damage

The rule in estimating compensation is that the judge decides on compensation equivalent to the damage caused to the aggrieved party. The loss he/she suffered and the gain he/she missed, provided that these damages are a natural result of the injury([79]) .

Elements of Damage Covered by Supplemental Compensation

Supplementary compensation covers the elements of damage sustained by the worker that were not covered by social compensation, and this requires the judge - who is on his way to determine supplementary compensation - to determine the value of the financial compensation and then deduct from this value what is equivalent to the value of the social

([77]) El-Sayed Eid Nayel: *The New Labor Law and Protection of Workers from the Risks of the Work Environment,* op.cit, p. 784.

([78]) Public Law 91 - 596 91st Congress, S. 2193 December 29, 1970 As amended by Public Law 101-552, §3101, November 5, 1990, the Senate and House of Representatives of the United States of America in Congress assembled.

([79]) Hammam Muhammad Mahmoud Zahran: *Labor Law, Individual Employment Contract,* New University House, Alexandria, 2007, p. 759, Ola Farouk Salah Azzam: *Termination of the Unimplemented Work Contract, Comparative Study,* Journal of Law and Economics, Faculty of Law, Cairo University, No. 90, Year 2017, p. 438.

compensation. Supplementary compensation covers compensation for physical damages that were not covered by social compensation, such as infertility, hair loss, nail cracking, genetic mutations, impotence and premature aging. These damages do not cause the worker to be unable to work and are not covered by social security. It also includes compensation for damages to the worker in case of the birth of a deformed or unviable child due to exposure to nuclear radiation, compensation for damages arising from dismissal from the job for fear of exposure to new radiation doses or other diseases, as well as compensation for financial damages. The aggrieved party shall return to the previous elements of the nuclear operator within the limits of the financial limitation of his/her liability ([80]). In sum, there is a great discrepancy in the legal status of the injured worker working in the nuclear facility and the position of the injured worker working outside it. While the latter can claim civil compensation to the nuclear operator without restriction or condition, it is required for the former to prove the fault of the employer. Therefore, it is advisable to consider the worker with nuclear damage from a third party always, so that he can obtain full compensation without the need to prove the fault of the employer ([81]). Thus, the insured worker who suffers nuclear damage has the right to social compensation for work injuries, and according to the general rules of civil liability depending on the type of compensation, if a condition is considered a work injury. Or civil compensation under the special exceptional scheme of nuclear liability ([82]).

Topic II. Nuclear Civil Liability and Compensation for Nuclear Damage Rules

An accident inflicted on the worker may cause him a nuclear bodily injury, which is not, however, compensable by reason of his departure from the concept of compensable work injury; the conditions for entitlement to

([80]) El-Sayed Eid Nayel: *The New Labor Law and Protection of Workers from the Risks of the Work Environment,* op.cit, p. 851, Hassan Qadous: *Compensation for work injury,* op.cit, p. 456.

([81]) El-Sayed Eid Nayel: *Social Security Solutions,* op.cit, p. 132. U.S. Court of Appeals for the District of Columbia Circuit, National Association of Regulatory Utility Commissioners v. U.S. Department of Energy, No. 11-1066, decided November 19, 2013, http://www.cadc.uscourts.gov/internet/opinions.nsf/2708C01ECFE-3109F85257C280053406E/$file/11-1066- 1466796.pdf.

([82]) Public Law 91 - 596 91st Congress, S. 2193 December 29, 1970 As amended by Public Law 101-552, §3101, November 5, 1990, the Senate and House of Representatives of the United States of America in Congress assembled.

compensation for this accident were not met. However, this does not mean that the worker is not compensated at all, but rather does not compensate him socially and civilly. But is the employer or the employer compensated for it? And what is this person? What is the nature of his responsibility? What are the pillars of exceptional nuclear responsibility, and other questions that raise controversy regarding the exceptional responsibility of the nuclear operator, as follows:

We refer before that to two things: the first; compensating the injured person for nuclear damage is in accordance with the provisions of international agreements, the most important of which is the Vienna convention on compensation for nuclear damage, the provisions of which are binding and followed in both the Egyptian and American systems; those who objectively place this responsibility on the shoulders of the nuclear facility user or the nuclear operator, and therefore they have matched the provisions. And the two of them; compensation for nuclear damage under the rules of nuclear civil liability is civil compensation for damage that is not considered a work injury or accident, and therefore is not considered supplemental social or civil compensation.

First: Acknowledgment of the Responsibility of the Nuclear Operator

One of the well-established principles in the legal arenas is to compensate the worker for the damage he sustains in connection with his work, as a civil compensation, if his conditions are met and the conditions for social compensation are not met. The basis for his/her return for civil compensation varies according to the type of injury. That is, he/she benefits from the provisions of exceptional nuclear liability, which are established by international agreements, if the nuclear damage resulted from an exceptional nuclear accident for the use of nuclear materials in a nuclear facility. The person responsible for compensating the nuclear damage is the operator of the nuclear facility.

Both Egyptian and American legislator focused nuclear responsibility and established it objectively on the shoulders of the nuclear operator, i.e. the one who is solely responsible according to the principle of "focusing on compensation for damages arising from the nuclear accident." The legislator did not consider the general rules of civil liability that necessitates proving the error, so the injured party is obligated to sue the operator of the facility alone and not others. Thus, the nuclear operator is obligated - under international agreements such as the Vienna convention, and national legislation - to secure a working environment, to maintain

and provide a financial guarantee covering its liability for nuclear damage. The state in which the nuclear facility is located also determines the value of the security or guarantee and the nature of its conditions, and the insurer or guarantor may not suspend the security or financial guarantee or terminate it without prior notification to the competent authority of the date in accordance with the form established by law ([83]).

Second: The Nature of the Nuclear Operator's Responsibility

The responsibility of the nuclear operator has three characteristics: the objective nature, the focused nature, and the "notably strict and exclusive liability for the operator([84]):

(A) The Operator's Liability for Nuclear Damage is of an Objective Nature

The liability of the nuclear operator is not based on fault, according to nuclear liability agreements, but rather on an objective basis. That is, it is a responsibility without fault. We find the text of article (4/1) of the Vienna convention that "the operator's liability for nuclear damage, in accordance with the provisions of this Agreement, is objective." article (2/1) of the Brussels convention stipulates that "the operator of a nuclear ship is objectively responsible for: all nuclear damage arising from a nuclear accident caused by nuclear fuel or radioactive waste relating to this ship." It is sufficient for the nuclear operator to be responsible for the existence of a causal relationship between the nuclear accident and the damage, regardless of whether or not the fault is established. The basis for nuclear responsibility here is damage, not fault. The injured is not obligated to prove the nuclear operator's fault, and his right to compensation arises as

([83]) On the limits of liability of the nuclear operator; The Vienna convention imposed only a minimum amount of "five million dollars per nuclear accident", and there was no upper limit on the liability of the nuclear operator. Thus the state may impose on him unlimited liability, and the state may reduce the minimum by no less than five million SDRs if the facility presents limited risks provided that the state provides a guarantee of the normal amount of liability. El-Sayed Eid Nayel: *The New Labor Law and Protection of Workers from the Risks of the Work Environment,* op.cit, p. 816.

([84]) David M. Bearden: Environmental Laws: *Summaries of Major Statutes Administered by EPA,* op.cit, pp.67-68. Nuclear Legislation in OECD and NEA Countries, Regulatory and Institutional Framework for Nuclear Activities, OECD 2016. Title 42 contains public health and safety laws, The Atomic Energy Act of 1954 and the Nuclear Waste Policy Act (NWPA). The Code of Federal Regulations (CFR).

soon as the accident occurs, and this right is confirmed when he proves the causal relationship between the accident and the damage. Nor does the nuclear operator absolve himself of his/her responsibility by proving that he/she did not make a mistake in operating the facility; the nuclear operator remains responsible even if the cause of the accident remains ([85]).

Furthermore, nuclear activities are characterized by their dangerous nature because they constitute a source of extreme danger, and the nuclear operator bears the objective responsibility. Therefore, it is appropriate to implement the idea of the created danger or the consequence of the activity. They are compatible with the subjectivity of these activities.

(B) The Operator's Liability for Nuclear Damage is of a Focused Nature

The nuclear legislator focused on the obligation to compensate on the nuclear operator of the facility alone and excluding other persons, even if they were responsible for the accident, in accordance with the general rules of civil liability. The goal of the legislator is to focus the responsibility on the person of the nuclear operator, in order to avoid the difficulties facing the injured in the event of the multiplicity of persons who are responsible but not jointly liable, and to avoid the multiplicity of financial guarantees of liability for nuclear damage. This made this responsibility consistent with justice. This is because the nuclear exploiter is the one who reaps the fruits of the nuclear materials that generate danger, and the one who has the means to protect against their dangers, and the concentration of responsibility achieves the interest of those affected. Thus, he/she assigns them a known person to claim compensation, and this person does not evade his/her responsibility by raising someone else's liability ([86]).

([85]) El-Sayed Eid Nayel: *The New Labor Law and Protection of Workers from the Risks of the Work Environment,* op.cit, p. 784.

([86]) Ken Silver: *The Energy Employees Occupational Illness Compensation Program,* A New Legislation to Compensate Affected Employees, op.cit, pp.270-271. Muhammad Abd al-Latif: *Nuclear Energy and the Law,* World of Thought Magazine, Issue 5, Volume 41 in 2013, p. 93.

(C) The Liability of the Operator for Nuclear Damage is of a Limited Nature

The Vienna convention (M5) stipulates that: "The state in which the nuclear facility is located may limit the responsibility of the nuclear operator to no less than five million US dollars for each nuclear accident". The liability of the operator of the nuclear ship is 1,500 million francs for each nuclear accident. As specified in article (7/1) of the Paris agreement, the total compensation that can be paid for damage arising from a single nuclear accident cannot exceed the maximum limit of liability established in accordance with this article. 2: The maximum is fifteen million European units of account, equivalent to 15 million US dollars. Thus, according to the provisions of the US atomic energy act, the operator is responsible for compensating the nuclear damage, and if any person - natural or legal - participates in causing the damage, the operator is still primarily responsible for compensating this damage. If the origin is that the operator's liability is always covered by an equal amount of money, which is in the interest of the affected, then the compensation requests submitted by them are covered financially, but if the operator's liability is not specified, international agreements obligate him to provide security or financial guarantee within the limits of the minimum liability ([87]). We find that the Egyptian nuclear law stipulates that the state is obligated to compensate if it is proven that the operator is unable to pay more than the value of the security or guarantee without prejudice to its right of recourse against it ([88]).

([87]) Public Law 91 - 596 91st Congress, S. 2193 December 29, 1970 As amended by Public Law 101-552, §3101, November 5, 1990, the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Occupational Safety and Health Act of 1970." David M. Bearden: *Environmental Laws:* Summaries of Major Statutes Administered by EPA, op.cit, pp.67-68. An explanation of EPA's *"Environmental Impact Statement (EIS) Rating System Criteria"* is available at www.crs.gov.

([88]) Refer to article 91 of the Egyptian nuclear law 7/2010. We note here that the 1997 Vienna convention (article 13 of it), has been amended to reconsider the value of compensation; where it became the minimum (300 million Special Drawing Units) for each nuclear accident.

Third: The Elements of Exceptional Nuclear Responsibility

The establishment of exceptional nuclear liability, three conditions are required: the nuclear accident, the damage, and the causation relationship, as follows ([89]):

A) Nuclear Accident

A nuclear accident, according to article 1 of the Paris convention, article 1 of the Vienna convention, and (M 1/8) of the Brussels convention, means every event (or facts of a single origin) that has caused damage as long as this event or damages - or some of them - have resulted. Regarding the radioactive properties or the combination of toxic, explosive or other hazardous properties of nuclear fuel, radioactive products or waste, or of radiation emitted from any other source of radiation located within a nuclear facility. It is clear that a nuclear accident may arise from a single incident that does not take a long period to occur - such as the explosion of a nuclear facility, or from a series of incidents brought together by one source, so that it is impossible to separate any incident from the other. Successive events constitute one incident and not several successive incidents, such as the case of an extended radioactive leak ([90]).

Conditions of a Nuclear Accident

It is clear from civil liability agreements that two conditions are required for the existence of a nuclear accident. The first condition: the accident is related to the exploitation of a nuclear facility: It is required for the beginning of the application of the rules of nuclear civil liability that the occurrence of the accident is linked to the exploitation of a nuclear facility. That is, it may have resulted from nuclear materials used in a nuclear facility for generation; or the accident occurred during the transportation of these materials for the facility's account; or while they were being stored for using them in power generation. The second condition: Intervention of radioactive nuclear materials: It is required that

([89]) El-Sayed Eid Nayel: *The New Labor Law and Protection of Workers from the Risks of the Work Environment*, op.cit, p. 784.

([90]) See CRS Insight. 4 Senate Committee on Appropriations, "FY15 Subcommittee Reported Bill and Draft Report," July 24, 2014, Nuclear Regulatory Commission, "NRC Certifies GE-Hitachi New Reactor Design," news release, September 16, 2014, www .nrc .gov..

the nuclear accident be due to the interference of nuclear materials, with the radioactive properties of these materials ([91]).

B) Damage

The nuclear liability agreements define the damages that the nuclear operator is obligated to compensate in aggregate as "damage to persons and damage to money".

(1) Civil Compensation for Damages to Persons

The subjectivity of civil nuclear responsibility requires the adoption of legislation different from the existing one. This allows for the possibility of compensating the injured and the injured in full for all the elements of the damage, while relieving the injured from the burden of proof or mitigating it. The adoption of the traditional rules of liability leads to the departure of the majority of the nuclear environmental damage from the scope of the lawsuits because it is not possible to say and prove that we are dealing with direct environmental damage. Therefore, the general rule is that the nuclear operator is obligated to compensate for the bodily harm caused to natural persons. Physical harm is any weakening of the financial liability of a natural person, resulting from compromising his/her physical or psychological integrity. Accordingly, compensation includes all damage resulting from the deprivation of a person's life or harm to his/her physical, mental or sexual health or his/her ability to have children. Examples are death, all injuries, wounds and diseases that affect a person such as (e.g. cancer, skin diseases, genetics and others ([92]).
Some legislation addressing the issue of nuclear civil liability was limited to the rules of civil law, while we find some legislation that is specific to the use of nuclear energy. Civil liability is part of its provisions in special texts, in this nuclear law, in The United States of America and Egypt. For example, (art.88 /T) of the Egyptian nuclear law states: "If the nuclear

([91]) Nuclear material means: (i) nuclear fuel; It is any material other than natural uranium that can produce energy by spontaneous sequential nuclear fission outside the reactor, either alone or after mixing it with another substance. (ii) radioactive products and wastes; It is any radioactive material produced during the production or use of nuclear fuel, or any material that becomes radioactive as a result of exposure to the radiation emitted during this production or use. Nuclear materials do not include natural uranium; it only poses dangers when it passes inside a nuclear reactor, when it is considered a nuclear fuel. See Mark Holt: *Nuclear Energy Policy,* op.cit, pp.15-17. www.crs.gov.
([92]) Mark Holt: *Nuclear Energy Policy,* op.cit, p.20. www.crs.gov.

accident arose due to an act or omission that occurred with the intent to cause damage, he/she has the right to recourse against the individual whose act or omission caused that intent ([93]).

C) The Causal Relationship

In order for the exceptional nuclear liability to occur, the injured must prove that the damage he sustained was due to the nuclear accident; proving a causal link is a necessary condition for entitlement to compensation. The problem of nuclear causation is part of the problem of causation in civil liability; therefore, the general rules of civil law adhere to it. The damage must also be direct; that is, it is linked to the accident with an influential causal relationship. If this relationship does not exist, it is an indirect damage, and the nuclear operator is not obligated to compensate for it. The effects of radiation exposure are divided into two types of effects ([94]).

(2) Civil Compensation for Damages to Property

Compensation for damage to nuclear facilities, funds located on the site of this facility, or means of transport that transport nuclear materials or hazardous waste, civil liability and consequently civil compensation for it may be established, provided that it is directly related to the operation of the nuclear facility ([95]). Here we address some of the questions that may be raised in this regard as follows:

([93]) Public Law 91 - 596 91st Congress, S. 2193 December 29, 1970 As amended by Public Law 101-552, §3101, November 5, 1990, the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Occupational Safety and Health Act of 1970." Egyptian Law No. 2011 of 2017 amending some provisions of the Law Regulating Nuclear and Radiological Activities promulgated by Law No. 7 of 2010, Egyptian Gazette in Issue No. 47 bis "b" issued on November 29, 2017.

([94]) Mark Holt: *Nuclear Energy Policy,* Congressional Research Service 7-5700, RL33558, October 15, 2014, pp.23-24. (Price Anderson: 42. U.S.C. 2210, Nuclear Legislation in OECD and NEA Countries, Regulatory and Institutional Framework for Nuclear Activities, Title 42 contains public health and safety laws. Ahmed Rashad Mahmoud Salam: *Responsibility for Nuclear Pollution*, op.cit, p. 52.

([95]) Jerry H. Yen, *Analyst in Environmental Policy, Environmental Policy Section*, Resources, Science, and Industry Division, Congressional Research Service, p.55. Sven-Erik Kaiser, U.S. EPA, *Office of Congressional and Intergovernmental Relations,* personal communication, p.62, December 16, 2011. For more information, see CRS Report RL33152, The National Environmental Policy Act (NEPA): Background and Implementation, Federal Environmental Pesticide Control Act of 1972, P.L. 92-516, Section 4(c).

The question arises about whether the compensation is for financial or economic damages resulting from nuclear pollution?
Examples include the damage caused by the cessation of trade exchange with the areas that have been exposed to nuclear contamination, the culling of agricultural and animal products or the prohibition of their consumption, as well as the loss resulting from the evacuation of people and the evacuation of the contaminated area. If the economic damages arise from actual contamination of the products with nuclear radiation, then the evacuation is justified. However, if the economic damage arose from mere precautionary measures taken by the state towards the areas where radioactive contamination is likely to reach, despite the uncertainty that pollution actually occurred in these areas, here the nuclear accident is an indirect cause of these damages and therefore does not enter into compensation according to the rules of nuclear liability ([96]).
The question also arises about whether the compensation is for the damage caused to the nuclear facility itself or to its property and material resources?
The damage may occur to the facility itself or to any property located nearby and is being used or intended for use in the purposes of that facility. In that case, it is excluded from the compensation: 1: damage incurred by either of them in accordance with article 4/5/a of the Vienna convention of 1963, as well as if the damage occurred to the means of transport. 2: in charge of transporting the nuclear materials that are the subject of the accident. Perhaps the reason for this exclusion lies in the fact that the operator is insured by the facility and its assets and property. There is no need, then, to include such damages within the scope of his/her obligation to compensate, in order to prevent competing with the excluded damages for damages incurred by others and to ensure that the maximum compensation is not affected ([97]).

Conclusion

The research dealt with the issue of legal protection of nuclear facilities by addressing two chapters, the first of which presented an introduction to the nuclear facility and its pollutants, their effects, how to protect them, nuclear safety standards, procedures and measures, while the second dealt

([96]) https://www.amacad.org/publication/nuclear-liability-key-component-public-policydecisi on- deploy-nuclear-energy-south east/section/5.
([97]) Suzan Moawad Ghoneim, *International Legal Systems to Ensure the Use of Nuclear Energy for Peaceful Purposes,* New University House, 2011, p. 677.

with the nuclear accident and its social or civil compensation. The most important thing dealt with is the entitlement of the worker with nuclear damage to the right to social compensation, and the worker's recourse to civil compensation is based on the rules of exceptional liability. The research reached several results and recommendations as follows:

Results

- The work environment in nuclear institutions is a part of the general environment, and it represents a qualitative environment characterized by danger that requires a special kind of legislative protection.

- A nuclear facility is the facility itself and its associated buildings and equipment in which nuclear materials are produced, converted, used, handled, stored or finally disposed of.

- To protect workers from the dangers of nuclear radiation, recommendations were issued by international organizations regarding the rules of prevention, the necessity of prior licensing, and the limits of the radiation dose to which the worker is allowed to be exposed.

- There are multiple uses of nuclear energy; it is used as fuel for nuclear reactors, for the production of medical isotopes and for other commercial and industrial purposes.

- Nuclear pollution is any pollution resulting from the use of nuclear materials or ionizing radiation or dealing with hazardous waste, which clearly affects the work environment.

- The concept of health, security and safety standards is not precisely defined by most laws, but it seeks to preserve the human element and the material element together and surround it with an atmosphere full of industrial security, safety and nuclear safety.

- The responsibility of the nuclear operator is an objective, focused and limited one. The American and Egyptian legislators have been keen to provide great protection to the injurer's right to compensation, based on an absolute responsibility that is not based on the idea of error, and bears the nuclear operator accountable even if he is not mistaken.

- According to the American atomic energy law, the responsibility is focused on the nuclear operator, so that the injured person returns the operator to compensate him/her for the damage, but it also allows the injured party to file a lawsuit against any other individual who contributed by mistake to the accident.

- If the injury is not covered by social compensation and the injury is nuclear, the injured may recourse under special provisions for civil liability or what is known exceptional nuclear responsibility.

Recommendations

- It is recommended by the Egyptian nuclear law that facilities for extracting and converting uranium and thorium minerals and radioactive waste management facilities should not be excluded from the list of nuclear facilities.
- Nuclear facilities must comply with all nuclear safety and security standards; in particular, they comply with the limits and doses of exposure to nuclear materials and safety standards, to prevent hazards such as physical hazards from equipment.

- Ensuring the existence of an effective nuclear safety and security system in all facilities to constitute a general system for dealing with the prevention of work-related injuries and illnesses, as well as the protection of workers' health.

- We appeal to the Egyptian legislator to amend article 65 of the Egyptian social security law, so that the period of the year specified as a period of security for occupational diseases is canceled and this period is left to a specialized medical committee, as is the approach of the American legislator.

- Encouraging the role of the concerned facilities that have many tasks related to scientific research in the field of using atomic energy or activities, i.e. in which nuclear materials are used.

- Developing applications of nuclear techniques and their multiple uses to make the best use of them.

- Establishing the department of atomic energy, which is concerned with granting licenses related to the possession or use of radioactive nuclear materials in various fields, especially industrial and medical. And to monitor nuclear facilities.

- Governments take measures to tighten control over emissions of power plants to reduce emissions, and to ensure the introduction of cleaner fuel standards in nuclear facilities.

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